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# ILLINOIS MINERAL INDUSTRY IN 1991

and Review of Preliminary Mineral Production Data for 1992

Irma E. Samson

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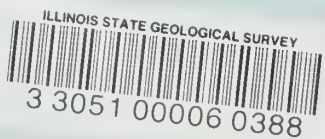
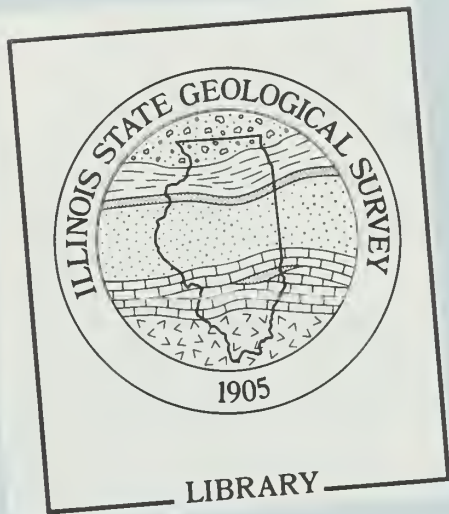
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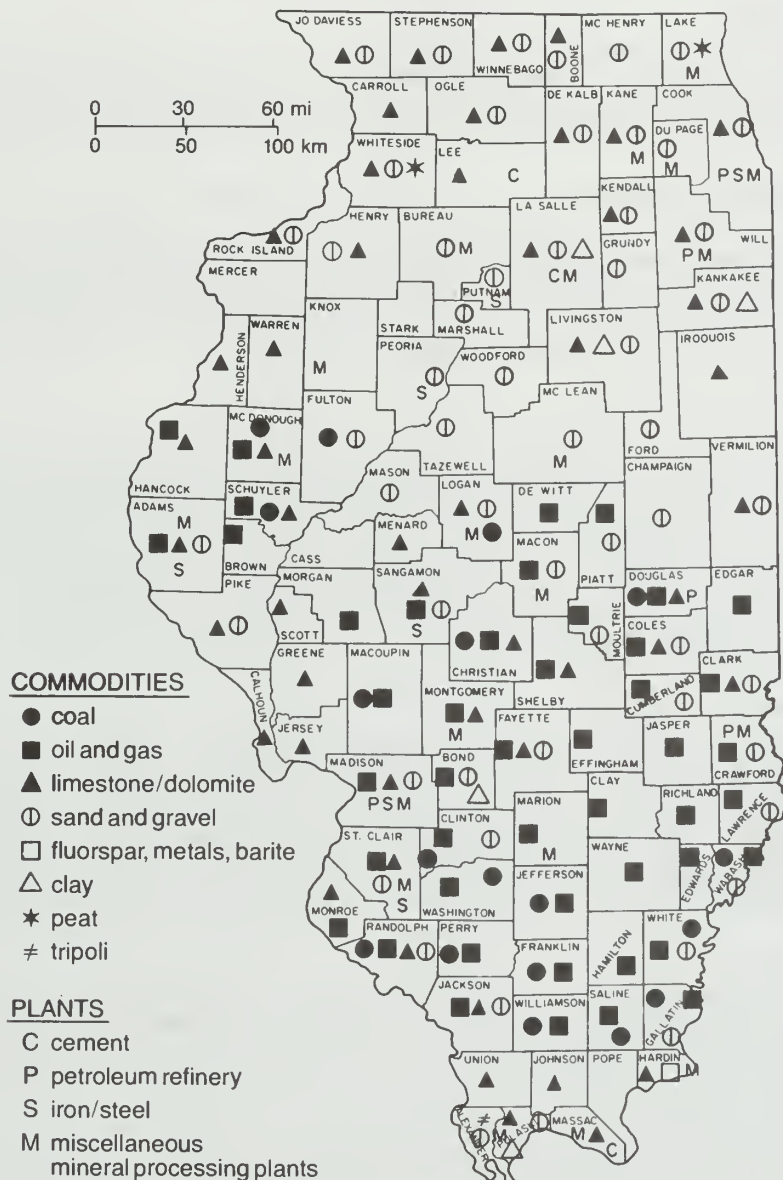
## EXECUTIVE SUMMARY

This report covers three types of mineral industry operations in Illinois (fig. 1):

- extracting minerals from the ground
- processing crude minerals (mined primarily out of state) into raw industrial materials
- manufacturing mineral products such as coke, lime, and cement from minerals extracted and processed primarily, but not exclusively, in Illinois.

### 1991 Reported Value

The total reported value of minerals extracted, processed, and manufactured in Illinois during 1991 was \$2,907.4 million, 0.3% lower than the 1990 total. The total value reported to the U.S. Bureau of Mines (USBM) is not necessarily the actual value because many producers do not report their production figures. Minerals extracted accounted for 90% of the reported value; crude minerals processed and manufactured minerals accounted for the remaining 10%. Coal continued to lead in value, followed by commodities from the industrial and construction materials category and oil (table 1; tables begin on page 22).



**Figure 1** Mineral production and mineral-processing plants in Illinois.



Illinois produced 6% of the tonnage and about 8% of the value of the coal produced nationally. The state continued to lead the nation in the production of fluorspar, industrial sand, and tripoli. Production of stone and sand and gravel were 6.2% and 3.8% of the national total, respectively (table 2).

### **Extracted Minerals**

In 1991 the value of commodities mined in Illinois was \$2,617.2 million, a 0.3% decrease from 1990. Mineral fuels (coal, crude oil, and natural gas) accounted for 79.8% of the total. Industrial and construction materials such as clay, fluorspar, sand and gravel, stone, and tripoli accounted for 19.9%. The remaining 0.3% came from metals, such as lead, zinc, and silver, and from other minerals, such as peat and gemstones.

Mineral extraction in 1991 was reported from 97 of the 102 counties in Illinois (table 3, fig. 1). Only Cass, Knox, Mercer, Pope, and Stark Counties had no reported mineral extraction. Perry, Saline, and Franklin Counties, major producers of coal and crude oil, accounted for 11%, 8.7%, and 7.2% of the state's total value of minerals produced, respectively.

### **Processed Minerals**

Figures for total reported value of processed minerals in 1991 are incomplete. The total includes only the figures for ground barite, expanded perlite, sulfur, calcined gypsum, exfoliated vermiculite, iron oxide pigments, and slag. Minerals not included on this list, but processed in the state, are natural gas liquids, bismuth, columbium, tantalum, and primary and secondary slab zinc.

### **Manufactured Mineral Products**

Mineral products manufactured in Illinois, primarily from minerals mined within the state, include cement (portland and masonry), coke, clay products, lime, and glass. The average unit value of sales of portland cement decreased about 1%; no figures were given for masonry cement in 1991. Lime production was down 9.1% and its unit value was down 8%. Clay products decreased 28.5% in value. Figures are no longer available for coke or glass.

### **Employment**

The Illinois Department of Labor reported that jobs in mining, quarrying, and oil and gas extraction continued a downward trend, decreasing 2%, from 19,600 in 1990 to 19,200 in 1991. The total nonagricultural employment went down 1.3%, from 5,288,300 in 1990 to 5,220,100 persons in 1991. Employment in the goods producing sector decreased 4.7%, from 1,222,200 to 1,165,100 employees in 1991, and in the service producing sector from 4,066,100 to 4,055,100 (table 4). According to the "Annual Coal, Oil and Gas Report, 1991," published by the Illinois Department of Mines and Minerals, employment in the Illinois coal industry decreased 4.6%, from 10,129 in 1990 to 9,667 in 1991 (table 9).

### **Mineral Shipments**

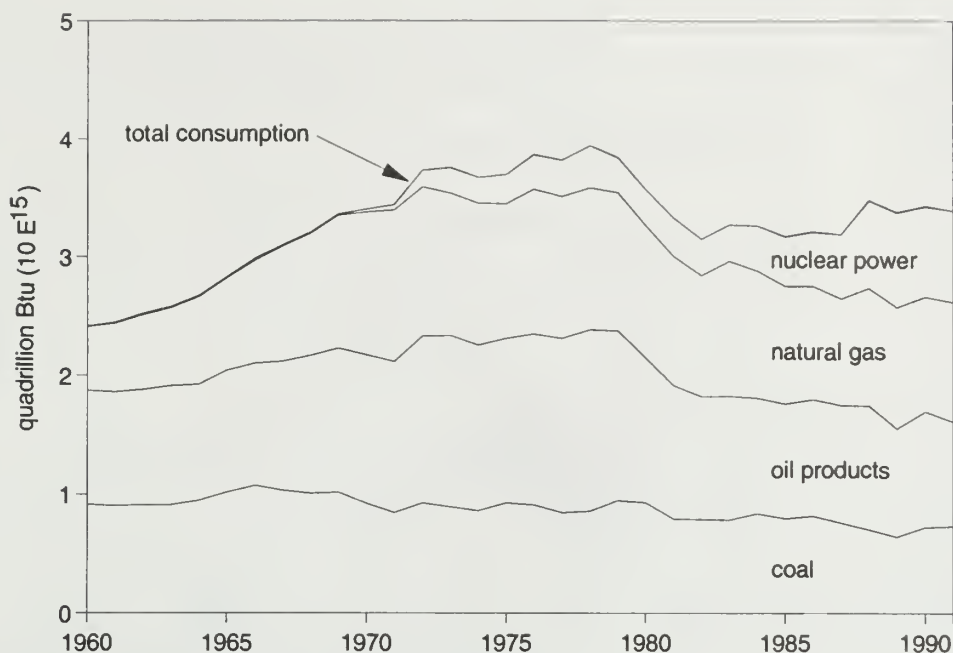
Mineral shipments are a large part of the Illinois transportation industry. Stone and sand and gravel are usually shipped by truck, since these products are used primarily near their sources. Coal is primarily shipped by rail, barge, or combination of both; only about 4% of the coal was moved to mine-mouth electricity-generating plants by conveyor belt. Crude oil and natural gas are mainly transported by pipeline. Other materials, such as fluorspar and clay products, are shipped by rail, truck, and barge. Pig iron and coke are generally used on site by integrated mills.

### **Consumption**

In 1991, the value of the state's consumption of mineral commodities was about 4.5% to 5% of the nation's total, or about the same proportion as Illinois' share of the total U.S. population. In physical units, Illinois' mineral consumption varied from less than 1% of the U.S. total (for residual fuel oil) to almost 16% (for zinc) (table 5). The high zinc consumption reflects Illinois' status as a major manufacturing state.

The state's energy consumption was estimated at 3.4 quadrillion Btu in 1991 (4.2% of the U.S. total), about the same as in 1990 (table 6). Fossil fuels provided about 77% of the state's energy needs: 25.8% was provided by oil and oil products, 29.8% by natural gas, and 21.6% by coal (fig. 2). Illinois' consumption of nuclear power in 1991 increased from 768 trillion in 1990 to 772 trillion





**Figure 2** Energy used in Illinois, 1960–1991.

Btu in 1991. For the third year, consumption of nuclear-generated electricity exceeded the amount produced by coal in Illinois.

## MINERALS EXTRACTED

### Fuels

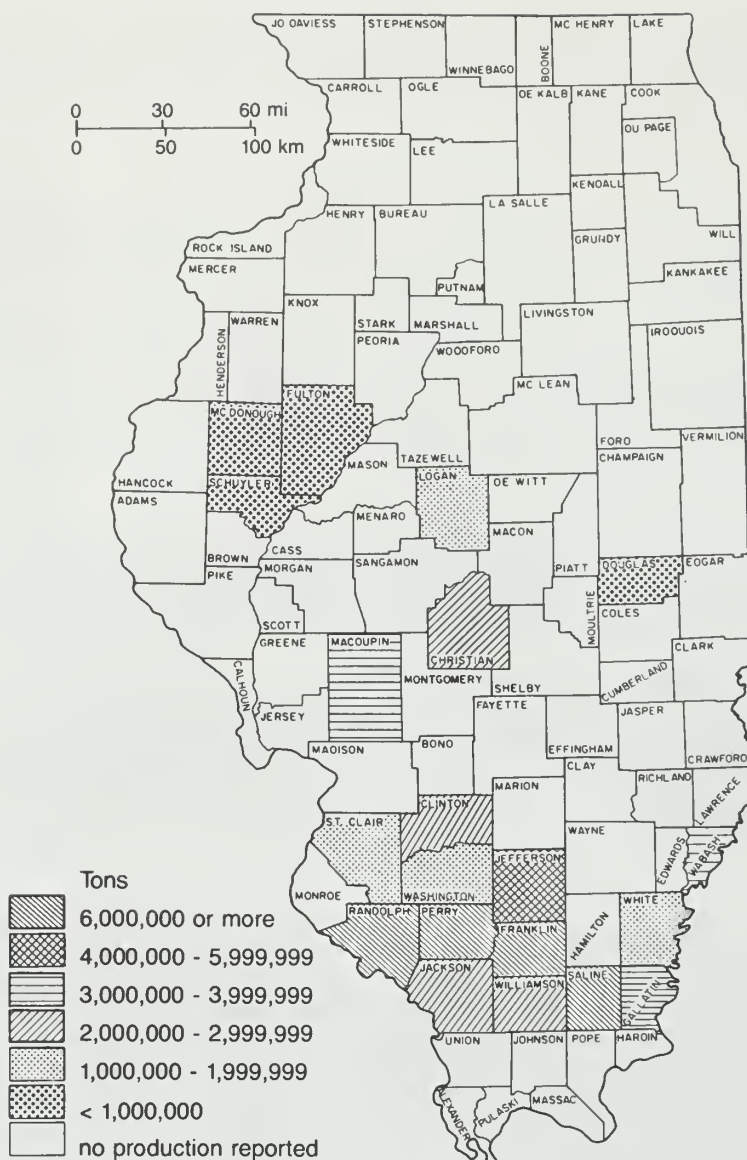
#### Coal

**Production** In 1991, Illinois continued to rank fifth in coal production, behind Wyoming, West Virginia, Kentucky, and Pennsylvania. Coal production in Illinois declined from 61.7 million tons in 1990 to 60 million tons in 1991 (table 7), a 2.6% decrease. Total value was \$1,701 million; unit value was \$28.35 per ton, a 2.2% increase in value per ton from 1990 (table 1).

Eighteen counties produced coal in 1991 (fig. 3), compared with 19 in 1990. Edgar County's only coal mine, Peabody Coal Company's Universal Mine, closed in December 1990. Perry, Saline, Randolph, and Franklin Counties together accounted for 50.9% of the state's total production. Perry County was the state's top producer, contributing 16.8% of all coal produced in the state. Approximately 87% of Perry County's output was from surface-mined coal. The county produced more than 55% of the state's total output of surface-mined coal. In Saline County, more than 85% of the coal was produced from underground mines, contributing more than 15% to the state's total underground production. More than 77% of Randolph County's coal came from underground mines, accounting for 11% of the state's total underground mined production. Franklin County, with all of its tonnage from underground mines, contributed more than 14%. Other counties that contributed substantially to underground coal mine production were Jefferson (9.7%), Wabash (8.4%), and Macoupin (7.9%). Approximately 73.5% of the state's total production came from underground and about 26.5% was from surface mines (fig. 4).

The number of coal mines operating in Illinois has steadily declined since the early 1900s. There were 920 mines in 1900. By the 1950s, approximately 200 mines were in operation. A further rapid decline to about 60 mines had occurred by 1970. In the latter half of the 1970s, the number of mines increased to about 70 as new mines opened after the first oil price shock of 1974. Demand for coal did not increase, however, and the number of mines again dropped. By 1991, only 44 mines remained in operation: 29 underground and 15 surface mines (fig. 5).

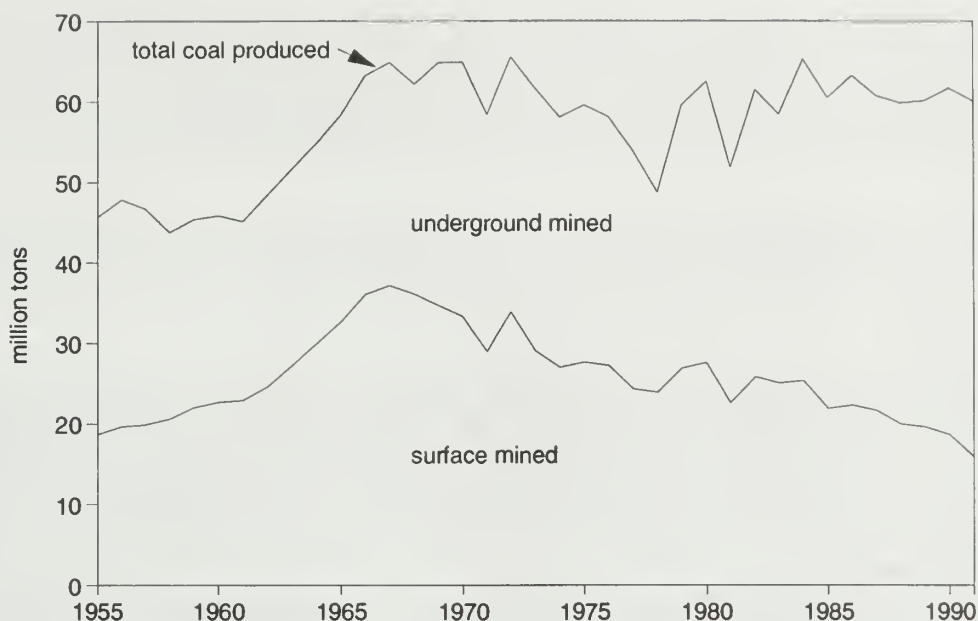
Since 1833, Illinois mines have produced more than 5.5 billion tons of coal (table 8). Surface mines operating since 1911 have accounted for 1.31 billion tons or 23.8% of the total. The average output per underground mine reached a new peak of 1.65 million tons in 1990, but dropped 8% to 1.52 million tons in 1991. The average surface-mine output, which has increased each



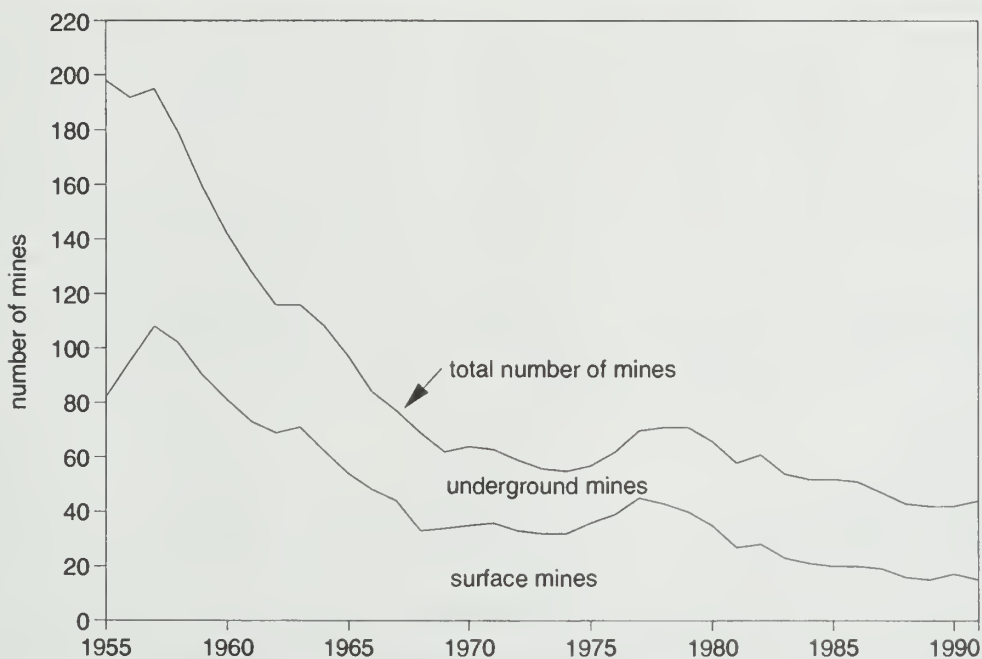
**Figure 3** Illinois coal production in 1991.

year since 1977 except for a 10% decline in 1985, reached a high of 1.31 million tons in 1989. In 1991, output decreased for the second year to 1.1 million tons (table 9). The trend in Illinois is toward fewer but larger coal companies. Of the 23 coal mining companies in Illinois in 1991, the top five companies—Zeigler, Peabody, Consolidation, AMAX, and Arch of Illinois—contributed 61.25% of the state's total output (table 10). The share of the top five companies changed slightly in 1990 as Zeigler purchased all the Old Ben Coal mines, making Zeigler the largest coal company in Illinois. Zeigler, with seven underground mines, remained the top company in 1991. By comparison, the top five U.S. companies produced 25.7% of the national total in 1991. Peabody, Consolidation, and AMAX are also among the top five companies in the United States.

**Employment and wages** In 1991 employment in Illinois coal mines again declined (4.6%) to 9,667 from 10,129 in 1990 (table 9). Employment in the mines has declined 47.7% from the 1979 high of 18,499. Employment in underground mines increased 1.3% and decreased 23.7% in surface mines.



**Figure 4** Trends in Illinois coal production, 1955–1991.



**Figure 5** Trends in the number of Illinois coal mines, 1955–1991

**Mine productivity** Productivity is measured in tons per person-shift and calculated by multiplying average production per miner per hour by the average length of a miner's shift. Unrounded data are used in calculating percentage changes. The labor productivity of underground mining operations in 1991 increased 5.9% to 23.97 tons from the previous year's 22.63 tons per person-shift. This was 4.7% above the peak level of 22.9 tons set in 1969. In surface mines, labor productivity increased 17.1% to 34.3 tons per person-shift from 29.3 tons in 1990. The peak year was 1967 with 41.6 tons (fig. 6). While the U.S. average productivity levels in underground and surface mines have surpassed their past peaks reached in 1969 and 1974, respectively, productivity levels in Illinois surface mines have yet to reach the past peak level. Underground mines surpassed the peak level this year. In fact, figure 6 indicates that productivity of Illinois underground

mines was surpassed by the U.S. average for the first time in 1989. The gap between the United States and Illinois surface-mine productivity has been widening since about 1975 because of the rising proportion of surface mined coal in the United States. This difference in productivity at the national versus state level indicates that the economic competitiveness of Illinois coal declined during the 1980s. Several mines with low productivity in the United States closed during the 1980s.

**Prices** The average price (f.o.b. mine) of Illinois coal increased 2.2% to \$28.35 per ton in 1991 from \$27.73 in 1990 (table 7). The average price of coal mined underground in Illinois was \$29.05 per ton, a 2.7% increase from 1990, and the price of surface-mined coal was \$26.59 per ton, a 0.5% increase.

**Shipments** Illinois coal was used in 22 states to generate electricity, manufacture coke, and supply energy for other industries. In 1991, about 90% of Illinois coal was sold to electric utility plants, about 1.2% to plants manufacturing metallurgical coke, and 7% to industrial plants and retail dealers. Illinois' coal exports to foreign countries jumped to 1.26 million tons in 1991 from 370,000 tons in 1990 (table 11). Shipments to electric utilities decreased about 4% from 54.8 million tons in 1990 to 52.5 million tons in 1991. Only 31% was sold within the state. Out-of-state shipments to utilities decreased 6%; 23% of the out-of-state shipments went to Missouri, 17% to Georgia and Florida, and 16% to Indiana.

All Illinois coal used for making coke was shipped to coking plants in northwestern Indiana. None was used in Illinois. Of the Illinois coal used for other industrial activities, 62% was consumed within the state, and about 17% was shipped to Missouri, 8% to Wisconsin, and 5% to Indiana.

**Transportation** Coal was shipped from mines to the consumer by rail, barge, and truck. Barge or rail-barge combination is gaining importance in Illinois as transportation costs become a significant aspect of price competition. Illinois coal depends primarily on out-of-state markets, and transportation costs must be kept low to compete with other coal producing states.

Type of transport	Tonnage <sup>a</sup>		
	1989	1990	1991
Rail	34,668,177	35,893,529	33,643,740
Barge or rail-barge <sup>b</sup>	17,514,528	16,920,572	17,721,595
Local trade and truck <sup>c</sup>	7,846,818	10,814,982	8,724,763
Rail Lines			
Illinois Central	22,657,159	17,108,784	21,554,145
Union Pacific	10,795,330	14,346,093	8,606,695
Norfolk Southern	5,500,783	6,084,152	5,859,135
Chicago & North Western	1,953,006	1,850,480	1,764,601
Burlington Northern	1,827,505	2,200,114	2,467,688
Others	7,030,897	3,112,844	6,900,205
Total rail	49,764,680	44,702,467	47,152,469

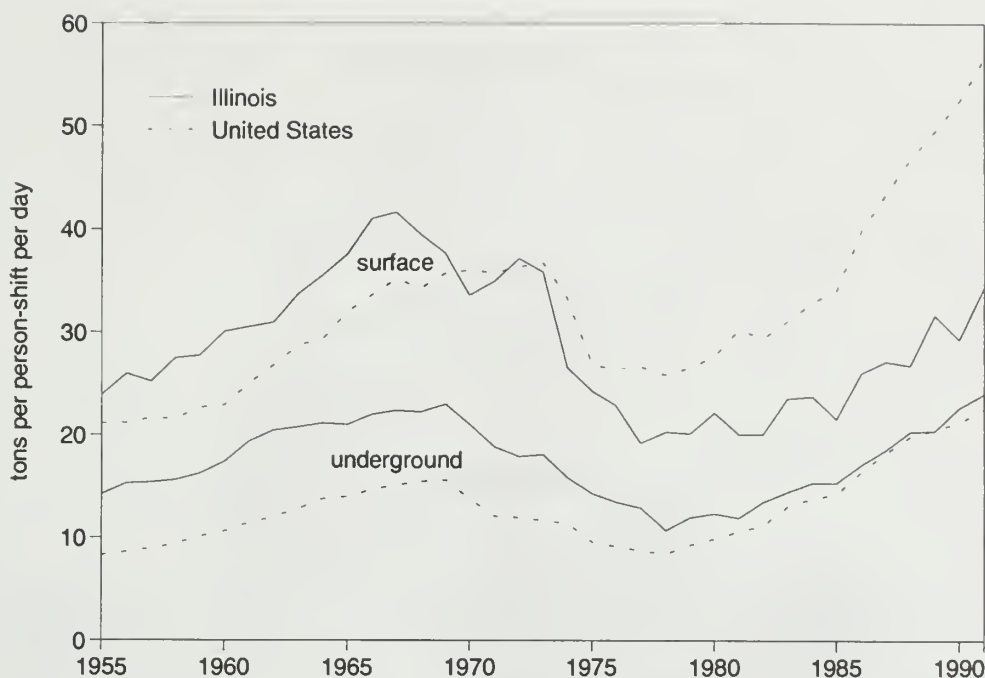
<sup>a</sup>Tonnages do not total because part of the rail tonnage is shown in the combined rail-barge category and some was shipped from inventory.

<sup>b</sup>Part of this coal was sent from mine to barge loading facility by conveyor belt.

<sup>c</sup>Part of this coal was sent by truck to barge.

Source: Illinois Department of Mines and Minerals.





**Figure 6** Trends in the productivity of Illinois coal mining, 1955–1991.

**Consumption** Illinois coal consumption increased for the second consecutive year to 33 million tons (table 12). Coal shipments from Illinois mines to Illinois markets have been declining steadily since the late 1960s; however, consumption in the state increased 8% in 1990 and gained 2% in 1991. Figure 7 shows that coal imports from other states are increasing, primarily because of the impact of the Clean Air Act and the high sulfur content of Illinois coal. More than 82% of all the coal consumed in Illinois in 1968 was also produced within the state; in 1991, only 57% of the coal consumed was supplied by in-state mines.

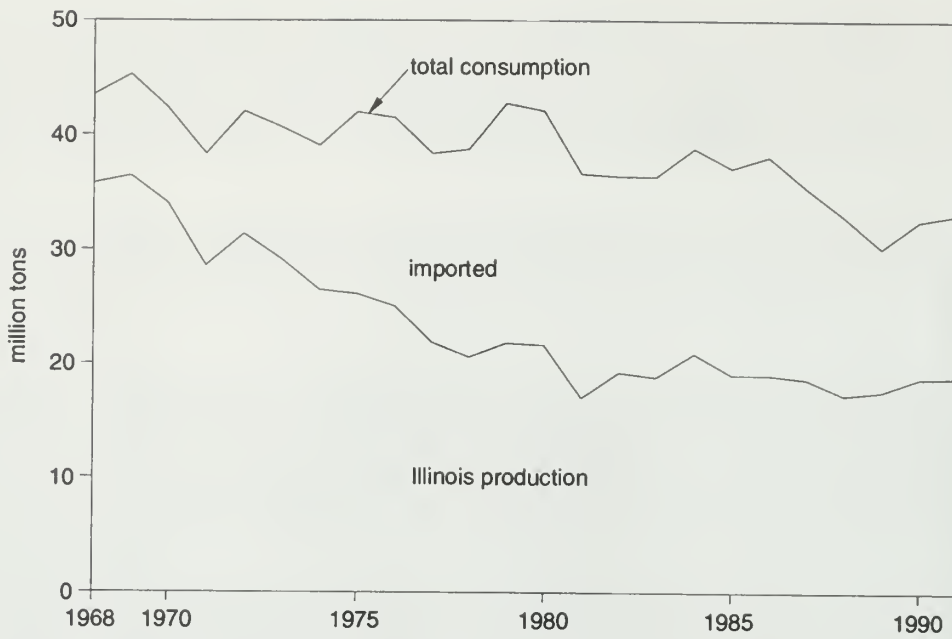
Total coal consumption by electric utilities in Illinois has steadily declined. The decrease in electric utilities consumption from 1990 to 1991 was less than 1%; however, from 1987 to 1991 it was about 9%. This decline is the result of increasing use of nuclear energy. Consumption of coking coal in Illinois decreased 12% in 1991; however, industrial consumption increased about 25%. All coking coal consumed in Illinois was imported from the Appalachian states.

### Crude Oil

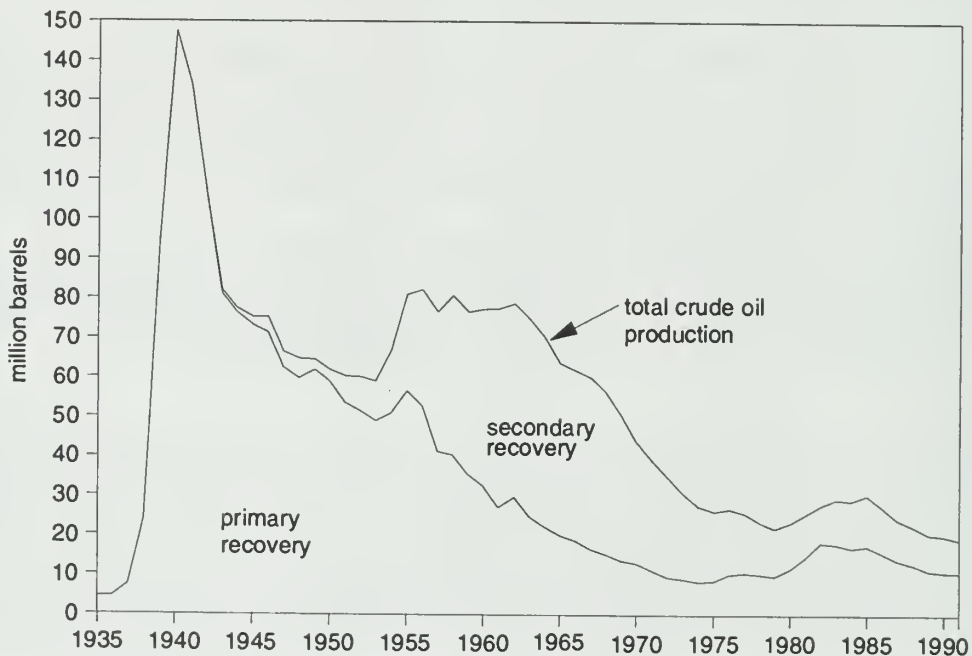
**Production** Crude oil production declined (4.5%) for the sixth consecutive year. Production decreased 37% (11.2 million barrels of oil) from 1985 to 1991. The 1991 production of 19.1 million barrels of oil had a value of \$384.9 million; average unit value was \$20.19 per barrel, representing a 1% decrease in value per barrel from 1990 (table 1). The secondary production method of waterflooding accounted for approximately 8.4 million barrels or about 44% of the state's total. Pressure-maintenance operations produced an estimated 76,000 barrels or 0.4% of the state's total (fig. 8). About 3.4 billion barrels of oil have been produced in Illinois during the past 103 years (fig. 9, table 13).

Illinois ranked 14th of 31 oil-producing states in 1991. Forty-seven counties produced crude oil (fig. 9, table 13). Each of the following five counties produced more than 1 million barrels, contributing about 48% of the state's total oil production.

<i>County</i>	<i>1990</i>	<i>1991</i>	<i>County</i>	<i>1990</i>	<i>1991</i>
Lawrence	12.9%	13.4%	Wayne	8.3%	8.2%
Crawford	10.4	11.0	Marion	6.0	6.3
White	9.5	9.1			

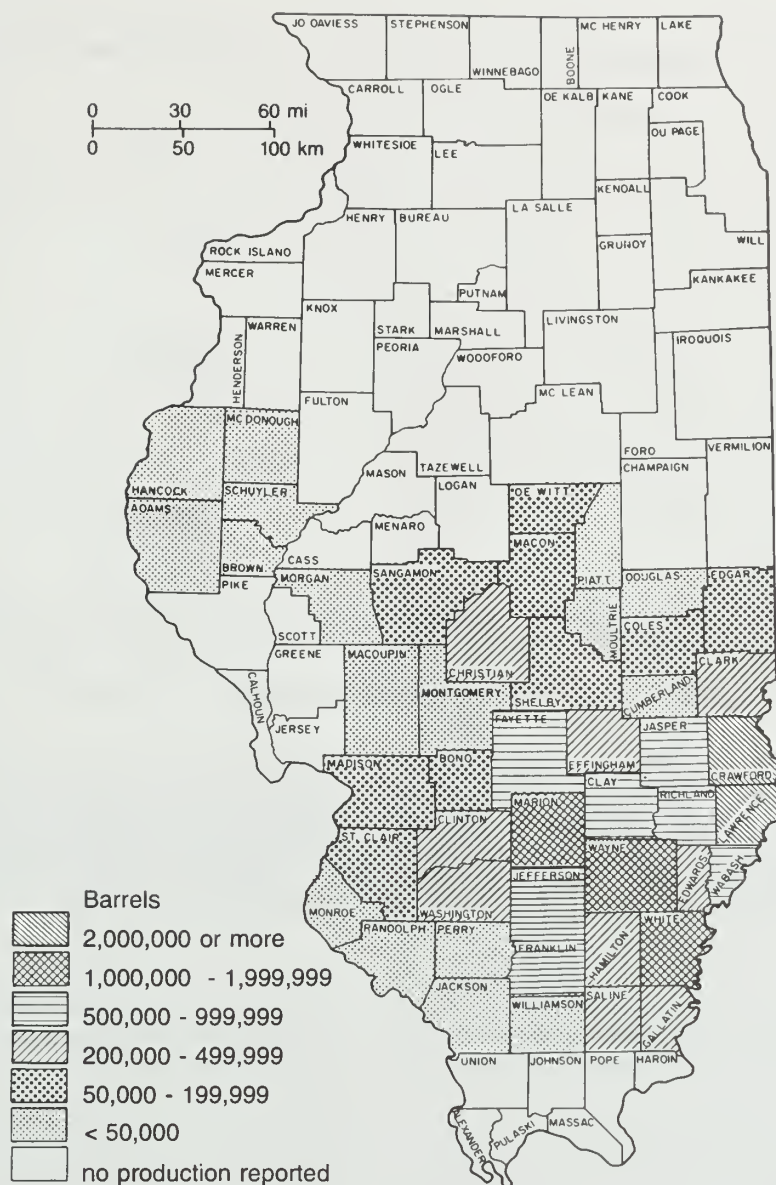


**Figure 7** Coal consumption in Illinois, 1968–1991.



**Figure 8** Annual crude oil production in Illinois, 1935–1991.

An oil field producing more than 200,000 barrels per year is considered a major field in Illinois. There were 12 major fields in 1990 and 1991. The combined production of these 12 fields in 1991 amounted to 57.4% of the state's total (table 14). The three largest fields—Lawrence, Clay City Consolidated, and Main Consolidated—each produced about 2 million barrels or more during 1991 or 34.7% of the state's total. In 1991, 20 new wells each had initial production of at least 100 or more barrels of oil per day. The highest initial production reported for a well during the



**Figure 9** Illinois crude oil production, 1991.

year was 290 barrels of oil per day from a field in Marion County. The average daily production per well in Illinois is 1.6 barrels; thus, the state remains highly sensitive to oil price changes.

Crude oil production peaked at 147.6 million barrels in 1940 (fig. 8). From that level, oil production by primary recovery methods declined steadily until 1973, although some years showed small gains. Introduction of the hydraulic rock-fracturing method in 1954 and increased use of waterflooding stabilized oil production at about 78 million barrels per year from 1955 to 1962. Production fell steadily after 1962 as reserves were depleted. In 1989, production dropped to the lowest since 1937, when production was 7.4 million barrels, and continued to drop in 1990 and 1991. By December 1991, proved reserves were 128 million barrels, a 2.3% decrease from December 1990.

**Refineries** As of January 1992, Illinois had seven operating refineries. The refineries are located in Cook, Crawford, Lawrence, Madison, and Will Counties. Total refining capacity was 952,600 barrels of oil per day. Refining capacity was up 2% from January 1, 1991.



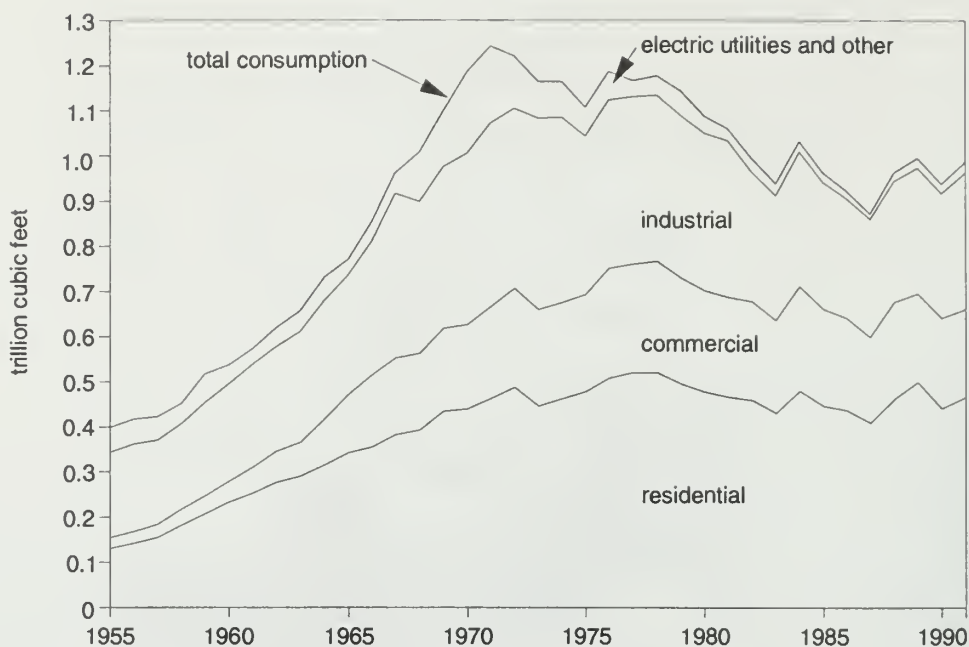


Figure 10 Consumption of natural gas in Illinois, 1955–1991.

**Consumption** Reported consumption of major petroleum products in Illinois decreased 9.2% in 1991. This decrease was due to a drop in consumption of all petroleum products except liquified petroleum gases (LPG) and kerosene. Consumption of these two products increased 14.6% and 16.7%, respectively. LPG is used as feedstock by the petrochemical industry and for manufacture of synthetic rubber. The use of distillate fuel oil declined 15.0%; motor gasoline, 10.9%; lubricants, 10.5%; asphalt and road oil, 5.1%; and residual fuel oil, 4.6% (table 15).

### Natural Gas

**Production** Natural gas is not produced in large quantities in Illinois. The state's reported production of natural gas in 1991 declined 31%. Natural gas production has been slowly declining for several years; however, in the past 2 years production has decreased 68.4%, primarily because of depletion of gas fields in Morgan, Pike, and Wayne Counties. Gas wells yielded 30.6% less than the previous year, and gas from oil wells dropped 45.8% (table 16). Williamson County was the top producer with 22% of the state's total output. St. Clair County came in second with 20% and Gallatin County took third place with 17% (table 17). The average wellhead value of Illinois gas increased 3% from \$2.11 per thousand cubic feet (Mcf) in 1990 to \$2.17 per Mcf in 1991 (table 1).

**Consumption** Natural gas consumption began to decline after 1971 and reached its recent low of 873,436 Mcf in 1987. Since then, consumption has generally risen (fig. 10). Reported natural gas consumption in Illinois increased 5.1% in 1991 (table 18). Although the largest percentage increase was for electric utilities (40%), it represented only a small volume of gas. Small increases also occurred in industrial and residential use (9.8% and 5.6%, respectively). There were small decreases in other uses (8.4%) and commercial uses (3.2%).

### Industrial and Construction Materials

#### Primary Barite

An accessory mineral in fluor spar ore, barite was recovered as a byproduct of the fluor spar industry of Hardin County from 1974 to 1985. Ozark-Mahoning Company, the only producer, shut down the barite circuit at its Rosiclare mill in 1985. The company reopened the circuit in 1989 and produced barite. Although production of barite is very small, it doubled in 1991. Barite is used primarily as a weighting agent in mud systems used to drill for oil and gas. Other uses include the manufacture of paints, glass, rubber, and barium chemicals.

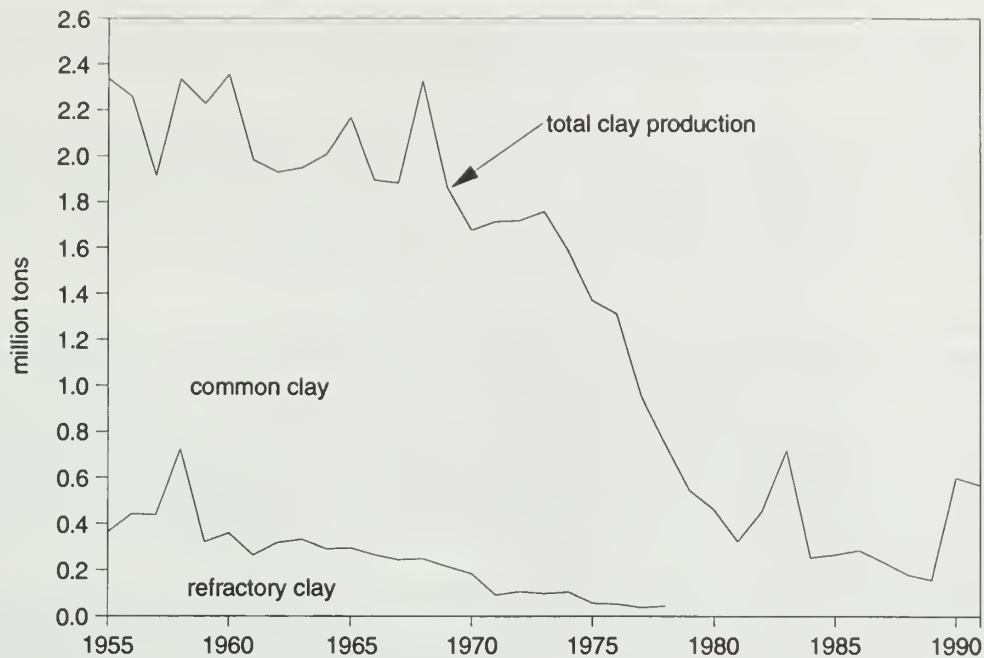


Figure 11 Trends in clay production in Illinois, 1955–1991.

## Clays

**Production** Both common clay and absorbent clay (fuller's earth) are mined in Illinois. Common clay is defined as a clay or claylike material that is sufficiently plastic to permit ready molding. Fuller's earth is a clay or claylike material that has absorbing, decolorizing, and purifying properties. The USBM reported Illinois clay production (excluding fuller's earth) decreased 14% in 1991 to 566,741 tons from 659,710 tons in 1990 (fig. 11). No quarry tile production was reported in 1991, in contrast with the 1990 report of more than 500,000 tons of quarry tile production. Brick production reported in 1991 was substantially higher than in 1990. Presumably, the 1990 quarry tile production report was in fact brick production. Illinois ranked 17th nationally in quantity and 10th in the value of total clay production. Production of common clay in the United States increased about 5%, from 25.9 million tons in 1990 to 27.2 million in 1991. Total of all clay produced in the United States increased about 3%.

The average value per ton of Illinois common clay in 1991 rose from \$3.81 to \$4.31, yielding a total value of \$2,442,278 for the year. Production of common clay was reported from six companies in four counties. Livingston County was the leading producer and La Salle County was second. Bond and Kankakee Counties were third and fourth. Two companies produce absorbent clay (fuller's earth) from Pulaski County. Their combined production and value increased about 49% in 1991.

**Uses** Common clays and shales mined in Illinois are used to manufacture bricks, sewer pipes, drain tiles, wall tiles, dinnerware, lightweight aggregates, and cement. About 90% of the state's common clay production in 1991 was used in manufacturing common brick and more than 8% was used in portland cement. Sales of Illinois clay to manufacturers of sewer pipe and drain tile accounted for the remaining production.

## Fluorspar

**Production and shipments** U.S. production of finished fluorspar decreased about 8.7% in 1991. This production, which represents about 12% of the nation's fluorspar requirements, was shipped primarily to the producer's parent chemical company. Only one company produced fluorspar in 1991. The United States depends on foreign sources for most of its fluorspar requirements. Barite and zinc (sphalerite) concentrates were recovered as coproducts of fluorspar processing in Illinois. In addition to the fluorspar mined in the United States, about 62,331 tons of fluosilicic acid (FSA) byproduct, equivalent to 109,703 tons of 92% fluorspar, was recovered from

eight phosphoric acid plants that process phosphate rock. FSA was used primarily in water fluoridation, either directly or after being converted to sodium silicofluoride; it was also used by the aluminum industry.

Ozark-Mahoning Company, the nation's only fluor spar producer, operated three mines (the Annabell Lee and Denton mines, and the reopened Minerva No.1 mine, formerly owned by Inverness Mining Company) and a flotation plant near Rosiclare in Hardin County. Ozark-Mahoning Company dried imported fluor spar to supplement production. At its facilities at Cave-In-Rock, Seaforth Mineral & Ore Company, Inc. also dried imported fluor spar primarily for consumption in the ceramic industry.

**Consumption** Reported consumption of fluor spar (acid spar and metallurgical spar only) in the United States dropped for the third year, about 30% from 1988 (651,055 tons) to 1991 (483,589 tons). About 68% of the reported production was used in the production of hydrofluoric acid, the primary ingredient in most organic and inorganic fluorine-bearing chemicals. Hydrofluoric acid is also used in processing aluminum and uranium. The steel industry consumed about 15% of the fluor spar production as a flux and in iron and steel foundries. This percentage, about 52% less than that in 1990, was accounted for by a 13% decrease in U.S. raw steel production. The remainder was consumed in manufacturing glass, welding-rod coatings, and enamels, and in fluoridating water (fluosilicic acid).

The apparent U.S. consumption (production + imports – exports ± change in stocks) decreased from 566,885 tons in 1990 to 365,831 tons in 1991, a 35% loss. Apparent consumption has declined about 50% since 1988. The discrepancy between apparent and reported consumption is often large for many minerals, including fluor spar, because not all users report consumption to the USBM.

Consumption of metallurgical-grade fluor spar by the steel industry is decreasing drastically partly because of the drop in steel output, but mainly because of continuing improvements in efficiency and more rigid raw material specifications. These modernizations will probably lower consumption of fluor spar for several years. Further decline in consumption is anticipated as a result of government restrictions on use of chlorofluorocarbons in an effort to implement the Montreal Protocol on Substances that Deplete the Ozone Layer.

### ***Sand and Gravel***

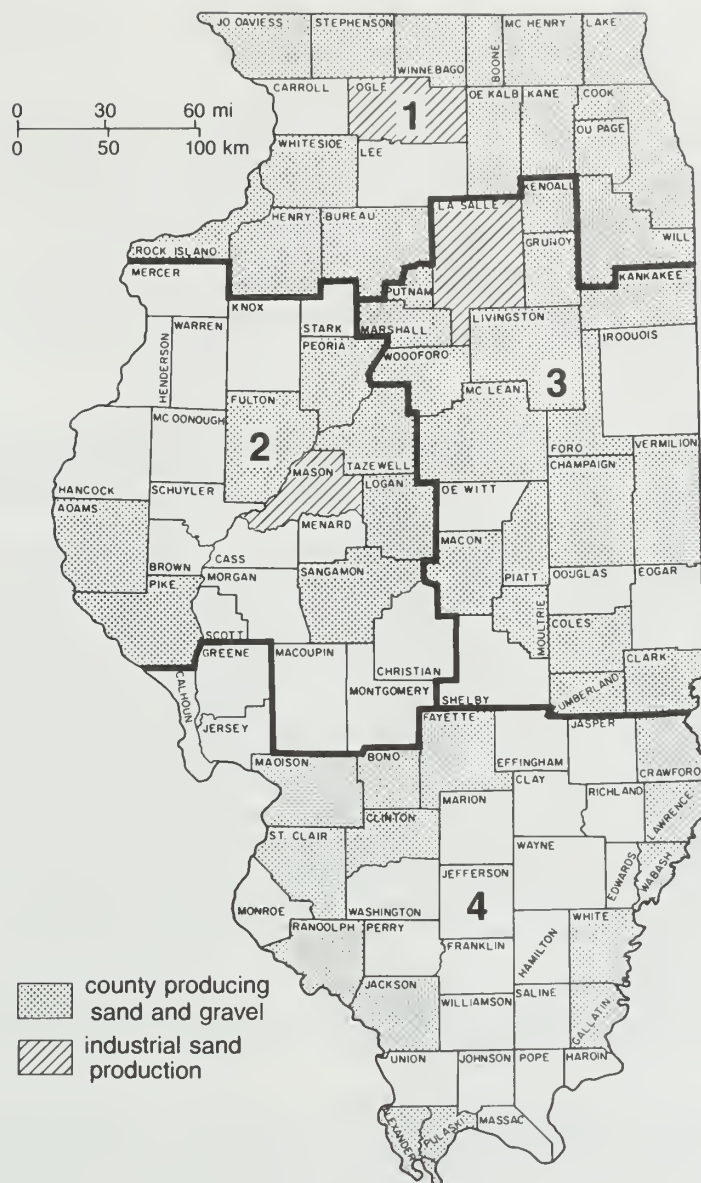
Since 1981, the USBM has surveyed sand and gravel producers only in even-numbered years. In odd-numbered years, only estimates are published. In 1985, the USBM began compiling sand and gravel production by district rather than by county to preserve the confidentiality of individual producers (fig. 12). Individual county data are no longer available.

**Production** Sand and gravel deposits are widely distributed in Illinois. Glacial deposits, chiefly valley trains and outwash plains, are the principal sources of construction sand and gravel. Production was estimated to be 26.3 million tons in 1991, a decrease of about 19% from 1990. For the past several years, the growth in sand and gravel production has been slower than the growth in stone production; in the past 3 years in particular, sand and gravel production has fallen while stone production has increased. One reason for these differing trends may be the more desirable physical properties of crushed stone for use in portland cement concrete. The combined value of sand and gravel in 1991 was \$90.4 million, and the average estimated unit value at the pit was \$3.44 per ton, up 6.5% from 1990 (table 1). Illinois ranked eighth of 50 states in sand and gravel production in 1991.

Seven counties (McHenry, Kane, Lake, Cook, Grundy, Woodford, and Peoria), each producing more than 1 million tons, accounted for about 70% of the sand and gravel production in Illinois. District 1 accounted for 63%; District 2, 10%; District 3, 19%; and District 4, 8%. In 1990, the latest year for actual figures, 105 companies operated 144 pits at 143 operations in 55 Illinois counties (fig. 12).

**Transportation** Because of its low unit price, most construction sand and gravel is not shipped farther than about 50 miles from the pit, although operations on navigable rivers may ship material much farther by barge. About three-quarters of the material was transported by truck in 1990; the remainder was shipped by barge and rail, or used at the pit, for example, in asphalt production.





**Figure 12** Illinois districts and counties producing sand and gravel in 1990.

**Consumption and uses** Production reported is actually material sold or used; stockpiled production is not reported until it is sold or consumed. Illinois sand and gravel is primarily used in road construction and as construction aggregate for buildings.

### **Industrial Sand**

**Production** The area best known for production of industrial sand (silica sand) from the St. Peter Sandstone of Middle Ordovician age is the Ottawa district of La Salle County. Within the district, the St. Peter is referred to as the Ottawa Sand. Illinois continued to rank first among 38 states in industrial sand production for 1991, accounting for 4.1 million tons (16% of the U.S. total). This amount was about an 8% decrease from 1990. The drop in production was due to the 1991 recession and the slowdown in oil well drilling, which resulted in reduced demand for sand by the glass and oil industries. The total value decreased 9% to \$57.2 million. The average unit value was estimated at \$13.80 per ton, a decrease of about 1%. Five companies operated seven pits in La Salle, Mason, and Ogle Counties.

**Transportation** Industrial sand was shipped mainly by rail in 1990; however, a significant amount is still shipped by truck and a small amount by barge.

**Consumption and uses** Industrial silica sand was produced in two forms, ground and unground. Unground sand was used primarily in glass manufacturing. Other uses included molding sand, blasting sand, grinding and polishing sand, railroad traction sand, filtration sand, and propping sand for hydrofracturing reservoir rock (frac sand) in oil wells. Ground sand was used in chemicals, abrasives, enamels, pottery, porcelain, tile, and various fillers.

Unimin's plants in La Salle and Ogle Counties were among the leaders in production of sand for the glass, foundry, and frac sand markets. Fairmont Minerals operating in La Salle County was a major producer for the blasting, foundry, and glass sand markets. U.S. Silica's plant, also in La Salle County, was a large producer of glass and frac sand and a major producer of foundry sand.

## **Stone**

Since 1981, the USBM has surveyed stone production only in odd-numbered years. Actual data are given for 1991 and estimated data for 1992. In 1985, the USBM began compiling stone production in Illinois by district (fig. 13). Individual county data are no longer available.

**Production** In 1991, Illinois ranked second, behind Pennsylvania, in production of crushed stone among 49 producing states. Illinois ranked fourth in 1990. Total Illinois stone production in 1991 was 68.6 million tons, a 9% increase from the 1990 estimate. Total value was \$295.4 million, a 4% gain (table 19) and the unit value was \$4.31, about 5% less than the 1990 estimate (table 1). Because of local zoning regulations and land development alternatives, stone shortages are expected in some urban and industrialized areas of the United States. This will eventually cause the relocation of crushed stone quarries away from highly populated areas.

In 1991, 53 of the state's 102 counties reported stone production (fig. 13). Crushed stone was produced in 177 quarries by 96 companies (table 19). About 55% of the state's total was produced in District 1; of the district's 37.6 million tons, 71% came from Cook and Will Counties. The largest production in the state came from Cook County, followed by Will and Hardin Counties. These three counties accounted for more than 45% of the state's total production. The 16 largest quarries (each produced more than 900,000 tons per year) accounted for 58% of the total production in 1991, while the 38 smallest producers (less than 25,000 tons per year) accounted for less than 1% of the total (table 20).

General Dynamics Material Service Corporation was the top stone producer in Illinois and seventh in the nation. Vulcan Materials Company ranked second in Illinois; however, with large operations in several other states, it was the largest U.S. producer.

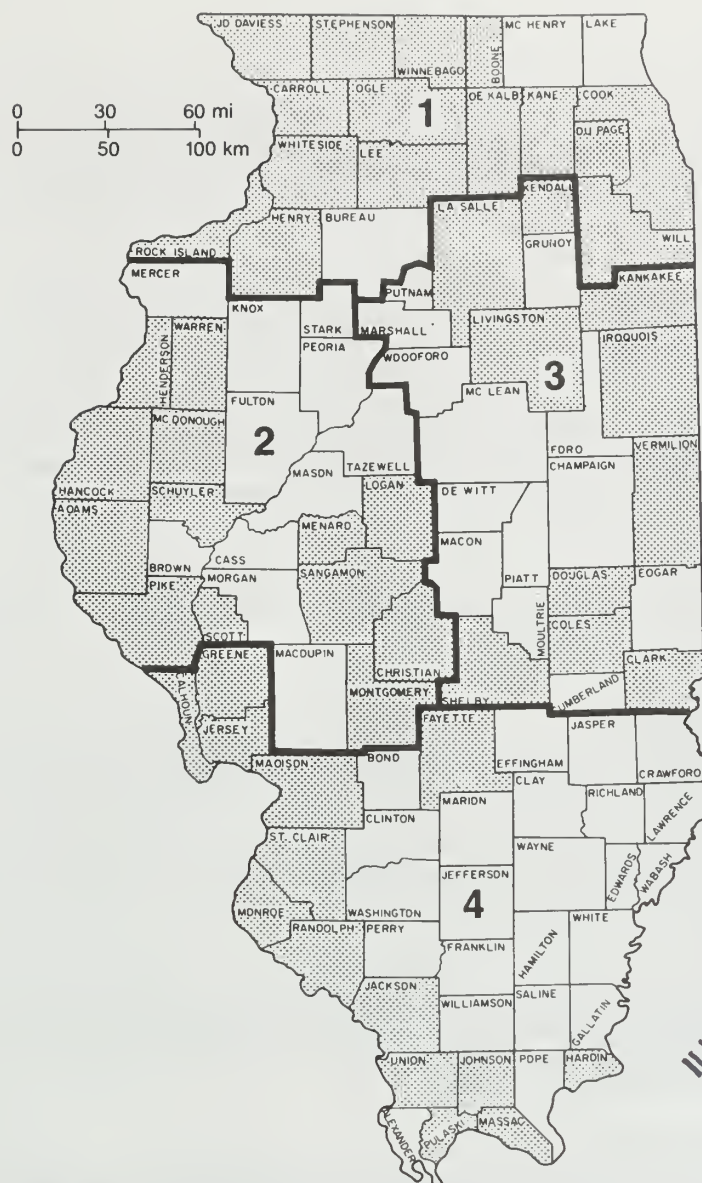
**Shipments** Stone, a bulk commodity, is used primarily near the quarry; therefore, nearly 69% of the stone was transported by truck. About 5% was used at the site and the remainder went by rail or barge. Some producers used waterways along the Illinois, Ohio, and Mississippi Rivers. Crushed stone was barged to in-state destinations, as well as to Pennsylvania and Gulf Coast markets in Alabama, Texas, and Louisiana. The Illinois Central Railroad uses stone produced in Illinois for ballast throughout its entire system.

**Consumption and uses** Stone is used principally as construction aggregate in portland cement, in bituminous highway construction as road-base stone, and in manufacturing portland cement (table 21). It is also used for chemical, agricultural, and other purposes. The small amount of dimension stone mined in Illinois is used as veneer in house construction, small retaining walls, rubble, and flagging. Sales for 1991 continued to increase in Illinois despite signs that the recession was taking its toll in the United States. U.S. consumption decreased about 10% in 1991.

## **Tripoli**

**Production** The term tripoli refers to microcrystalline silica. Unimin Specialty Minerals Inc., a division of Unimin Corporation, is the nation's leading producer of tripoli. Located in Alexander County in southern Illinois, Unimin Specialty is the only producer of high-grade tripoli in the state.

Illinois remained the nation's largest producer of tripoli, accounting for more than half the total U.S. production in 1991. Actual production figures are confidential; however, crude tripoli production in Illinois increased 1% from 1990 to 1991 and value increased about 4.5%.



**Figure 13** Illinois districts and counties producing stone in 1991 (patterned areas).

**Consumption and uses** Tripoli processed in Illinois was used as filler in paints, plastics, and rubber products, and as abrasives in buffing and polishing compounds, soap, and toothpaste. Iron-stained tripoli is now being quarried for use in the manufacture of portland cement.

## Metals

### *Zinc, Lead, Silver, and Copper*

**Production** Zinc, lead, silver, and copper are recovered from fluorspar ore mined in Hardin County by Ozark-Mahoning Company. No production of lead, copper, or silver was reported in 1991. Zinc (sphalerite concentrate) production jumped about 66% in 1991 and its value increased 17%. These metals, byproducts of the fluorspar industry, have been produced in relatively small quantities and only add a small amount to the total value of minerals produced in the state.

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## **Other Minerals**

### ***Peat***

All commercial sales of peat in the United States (excluding imports) are for agricultural and horticultural purposes. Three major kinds of peat—reed sedge, moss, and peat humus—were produced in Illinois by four companies in Lake and Whiteside Counties. Peat production in 1991 remained the same as in 1990, while value increased a small amount (0.4%).

About 76 peat operations were active in 19 states. Georgia, Maryland, and North Dakota did not report production in 1991. Florida and Michigan, the leading states, provided about 60% of the U.S. total. Minnesota was the third largest producing state. Seven contiguous states in the Midwest and north-central Great Lakes and three western states accounted for about 50% of the total U.S. peat production. National peat production declined 9% in 1991, one-third of this loss was attributable to decreased production in five mid-America states (Illinois, Indiana, Iowa, Ohio, and Pennsylvania). More than 98% of Illinois' total peat was sold in packaged form, almost entirely for general soil improvement. The market for domestic peat continued to reflect a general downturn that has been apparent in the U.S. economy for the past 3 years. Canadian imports also increased from 35% of the total U.S. supply in 1987 to 48% in 1991.

### ***Gemstones***

Limited to specimen-grade fluorite and accessory minerals collected in the fluorspar mines in Illinois, gemstones contributed little to the total value of mineral production. The estimated value of gemstones must be withheld in Illinois.

## **MINERALS PROCESSED**

Minerals extracted mainly in other states or foreign countries but processed in Illinois include ground barite, columbium and tantalum, calcined gypsum, crude iodine, iron oxide pigments, natural gas liquids, expanded perlite, pig iron, sulfur, exfoliated vermiculite, primary slab zinc, and secondary slab zinc. The total value of minerals processed in Illinois is incomplete because the two largest producers of pig iron did not respond to the USBM annual survey; therefore, no figures are available for pig-iron production in the state.

### ***Ground Barite***

Three Illinois companies continued to process ground barite, J. M. Huber Corp. of Quincy in Adams County, American Minerals Inc. of Rosiclare in Hardin County, and Harcros Pigments Inc. of East St. Louis in St. Clair County. The ground barite processed in Illinois is used almost exclusively as a filler or an extender in paints.

### ***Columbium and Tantalum***

Fansteel in Cook County no longer processes columbium-tantalum concentrate imported from foreign countries, but the firm retains a corporate office in North Chicago. Columbium and tantalum are used primarily to produce various steel alloys.

### ***Calcined Gypsum***

Calcined gypsum, used primarily for prefabricated housing materials such as wallboard, was processed by the National Gypsum Company in Lake County. The use of gypsum wallboard in elevator shaft walls has increased steadily every year. It is also used in manufactured (mobile) homes, and the remodeling of homes and offices. Repair and remodeling remained a strong market for the gypsum industry. As expected, the production of calcined gypsum in 1991 decreased 13% because of the sluggish economy, but production is expected to climb slowly as conditions improve during the next few years. The value of gypsum also declined 13%. Gypsum from flue-gas desulfurization (sulfo-gypsum) has not entered Illinois markets because of the absence of plants generating large quantities of usable gypsum and the marketing problems associated with the color and purity of sulfo-gypsum.



### ***Crude Iodine***

Crude iodine was processed into inorganic compounds for commercial use at three Illinois plants: Allied Signal Company of Metropolis in Massac County, West Agro Inc. of Des Plaines in Cook County, and ECHOLAB Inc. of Joliet in Will County. Although crude iodine is used primarily as a catalyst or stabilizer, it also is added to animal feed, salt, inks, colorants, pharmaceuticals, and sanitary and industrial disinfectants. Consumption in Illinois increased about 4% in 1991.

### ***Iron Oxide Pigments***

Finished pigments were produced from iron ore imported from other states by four companies: the Prince Manufacturing Company in Adams County, AST Company in Madison County, Harcros Pigments Inc. (formerly Pfizer) in St. Clair County, and Solomon Grinding Service in Sangamon County. Pfizer sold its interests in iron oxide pigments in Emeryville, California, Easton, Pennsylvania, and East St. Louis, Illinois, in 1990 to Harcros Pigments Inc., a U.S. subsidiary of Harrisons & Crosfield PLC of the United Kingdom. The AST Company of Granite City reported production of synthetic yellow iron oxide for the first time. The company uses a more energy-efficient process for producing regenerator oxides. It also uses a warm hydrochloric acid bath to pickle nonscrap, low carbon steels. The process is said to have a double value—it services finished steel products and produces synthetic iron oxide pigment. The process can probably be used to treat the pollution problem of steel plant waste streams.

### ***Natural Gas Liquids***

Natural gas liquids include ethane, propane, isobutane, unsplit butane, and a combination of gasoline and liquefied petroleum gas. Natural gas liquids were processed in Douglas County by the U.S. Industrial Chemical Company, a division of Quantum Chemical Corporation. The U.S. Department of Energy reported that Illinois processed 951 Mcf of gas in 1991, all of it from Illinois production. The total liquids extracted from gas in Illinois amounted to 85,000 barrels.

### ***Expanded Perlite***

Crude perlite mined outside the state was processed by three companies: Silbrico Corporation in Cook County, Illinois Strong-Lite Products Corporation in La Salle County, and Manville Products Corporation in Will County. Production and value of expanded perlite decreased 18% and 9%, respectively. The average price per ton increased about 11% in 1991. Illinois ranked second, behind Mississippi, among 33 states in quantity of expanded perlite sold and used.

Expanded perlite is used primarily in roof insulation board and for horticultural purposes. Other uses include lightweight aggregate for concrete and plaster, insulation, and filters.

### ***Pig Iron and Raw Steel***

The American Iron and Steel Institute in Washington, D.C., ranked Illinois fifth in raw steel production. Illinois produced 7.2 million tons or 9% of the U.S. output in 1991. Production was down 5.4% from the 7.61 million tons in 1990. No ownership changes nor major developments were announced in the primary steel sector in 1991.

In the United States, pig iron was produced by 15 companies in approximately 60 blast furnaces; 42 to 48 of these were in continuous operation. Five blast furnaces are in Illinois. Steel-making furnaces located at the same site used most of the pig iron in liquid form for refining raw steel.

### ***Slag (Iron and Steel)***

In 1991, 32 facilities in 12 states (3 in Illinois) processed iron slag, and 77 facilities in 26 states (6 in Illinois) processed steel slag. Five companies operating eight plants in Clay, Cook, Kankakee, Madison, and Whiteside Counties processed slag from iron and steel furnaces; four companies operating six plants processed steel slag, and three producers operating three plants processed iron slag. The slag was used mostly for construction aggregate—asphaltic concrete, road-base material, mineral wool, railroad ballast, and fill.

### ***Recovered Elemental Sulfur***

Four companies in three counties, Crawford, Madison, and Will, recovered elemental sulfur as a byproduct of their oil refinery operations. Sales of sulfur decreased 7.7%, from 259,846 tons in 1990 to 239,736 tons in 1991. Total value decreased 16.3%, from \$20.9 million in 1990 to \$17.5

million in 1991. Sulfur differs from most other major mineral commodities in that it is primarily used as a chemical reagent rather than as a component of a finished product. Sulfur is primarily used for agricultural purposes as a component of phosphatic fertilizers.

### ***Exfoliated Vermiculite***

Exfoliated vermiculite, processed from crude vermiculite mined outside the state, was produced by two companies in Du Page and La Salle Counties. The state's sales decreased 26.7% in 1991 and value decreased 10.6%. The average value per ton increased 22%. In Illinois, exfoliated vermiculite is used for the following products:

	1990 (%)	1991 (%)
Loose-fill insulation	16.1	19.4
Block insulation	24.3	21.8
Concrete and plastic aggregate	15.8	13.8
Horticulture and agriculture	17.6	19.8
Fireproofing and other uses	26.2	25.2

### ***Primary and Secondary Slab Zinc***

During 1991, secondary slab zinc was processed at Illinois Smelting and Refining Company in Cook County. Production data for individual states are not available. Illinois was the top consumer of slab zinc, accounting for more than 15% of the U.S. reported consumption. The U.S. smelter production was near capacity and the highest since 1981. Most of the secondary feed is crude zinc calcine recovered from the recycling of electric arc furnace (EAF) dust. A byproduct of steelmaking, EAF dust was treated at Horsehead Resource Development Company (HRD) plants in Illinois, Pennsylvania, and Tennessee. Laclede Steel Company is constructing an EAF dust-processing facility in Alton. The plant will be able to produce 36,000 tons of secondary slab zinc per year. Production is scheduled to start in early 1992.

U.S. refined metal production was up slightly from 1990 and the highest since 1981. Three companies in the U.S. operated four primary zinc refineries in 1991. One of these smelters, Big River Zinc Corporation, is in Sauget, Illinois.

Eagle Zinc Company at Hillsboro, Illinois, is the only domestic producer of zinc oxide that uses the American process. This zinc oxide is sold directly for use in animal feed and for other agricultural purposes.

## **PRODUCTS MANUFACTURED FROM MINERALS**

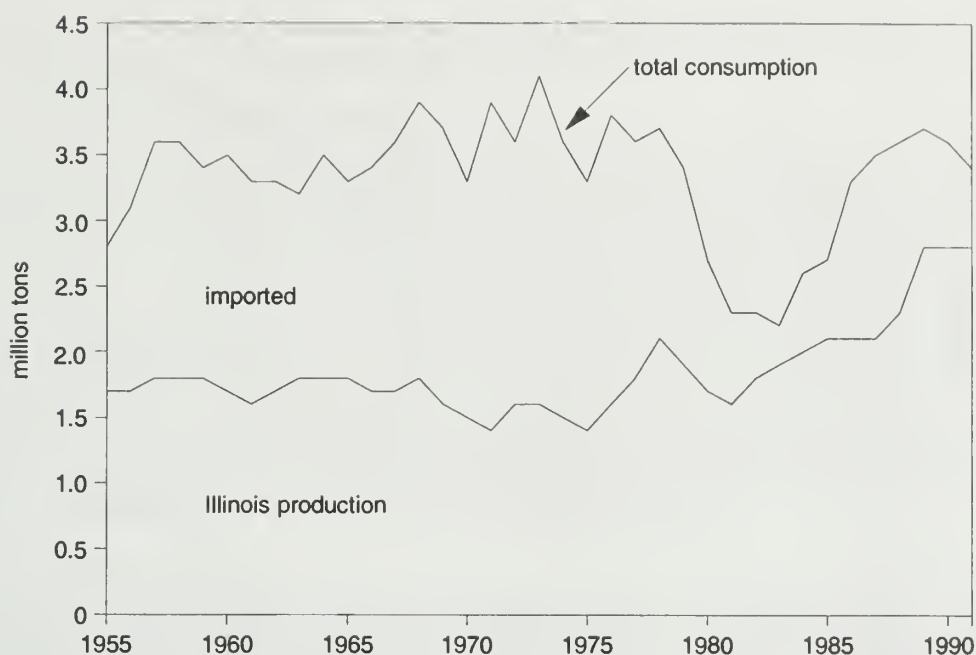
Cement, clay products, coke, glass, and lime were manufactured in 1991 from crude mineral materials mined in and out of state.

### ***Cement***

**Production** An estimated 4 million tons of raw materials was used to manufacture portland cement in 1991. The raw materials include cement rock (an argillaceous limestone containing calcium, silica, alumina, and magnesia), limestone, clay, shale, sand, fly ash, slag, gypsum, and tripoli. The four companies that produced cement in the state are Illinois Cement Company, a subsidiary of Centex Corporation, and Lone Star Industries, both in La Salle County; Dixon-Marquette Cement, a subsidiary of Prairie Materials Sales in Lee County; and Missouri Portland Cement Company, a division of Cementia Oldings AG in Massac County. All four companies produced portland cement, and all except Illinois Cement Company, also produced masonry cement.

Portland cement sales decreased 7% in 1991, and the value per ton decreased slightly from \$41.10 in 1990 to \$41.05 in 1991 (table 22). Prepared masonry cement sales dropped about 84%, but the price per ton jumped 15%. Nearly all the cement was delivered in bulk by truck, though small amounts are shipped by rail and barge.

**Consumption** Among states that use cement, Illinois ranked fourth behind California, Texas, and Florida. Consumers in Illinois used about 3.35 million tons of portland cement (fig. 14) and 75,048 tons of masonry cement in 1991. These figures represent decreases, 8% for portland cement and 18% for masonry cement. An increasing portion of cement consumed in the 1980s is manufactured in Illinois.



**Figure 14** Illinois production and consumption of finished portland cement, 1955–1991.

### **Clay Products**

To obtain accurate current information about the amount and value of clay products manufactured in Illinois, the Illinois State Geological Survey sends questionnaires annually to all producers in the state.

Clay products were valued at \$62.6 million in 1991. The value of whiteware and pottery decreased from \$56.0 million in 1990 to \$36.1 million in 1991. The value of all other clay products decreased from \$31.6 million in 1990 to \$26.5 million in 1991.

### **Coke**

**Production** All data on coke production in Illinois were withheld. U.S. production decreased about 13% in 1991. The U.S. Department of Energy no longer provides data on byproducts on a state-by-state basis. The average U.S. price of coal receipts at coke plants in 1991 was \$48.88 per ton compared with \$47.73 per ton in 1990.

**Consumption and uses** Coke is used for pig iron production, foundry and other industrial purposes, and residential heating. U.S. consumption decreased 17.4%, from 33.3 million tons in 1990 to 27.5 million tons in 1991. Coke breeze was used as fuel in steam and agglomerating plants. State-by-state data on coke breeze are no longer available. U.S. breeze distribution increased from 1.9 million in 1990 to 2.1 million in 1991.

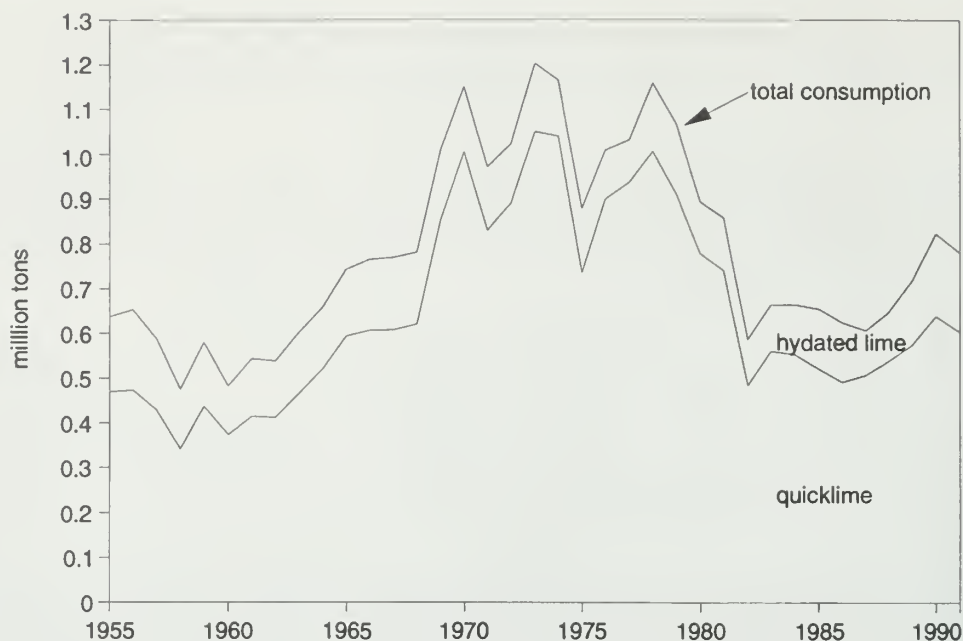
### **Glass**

Glass and/or fiberglass are manufactured in Du Page, Lake, La Salle, Logan, McLean, Macon, Madison, Marion, Montgomery, St. Clair, and Will Counties. Production data are not available.

### **Lime**

**Production** Illinois continued to rank seventh of 32 states in production of lime in 1991. The top seven states—Missouri, Ohio, Kentucky, Pennsylvania, Alabama, Texas, and Illinois—accounted for 65% of the total U.S. output. Although data for lime production in Illinois cannot be disclosed, production and value decreased (9% and 8%, respectively) after increasing for the past 3 years. Three plants in Cook County supplied the state's entire output. Two plants owned by Marblehead Lime Company, a division of General Dynamics, produced quicklime and hydrated lime; the Vulcan Materials Company plant produced quicklime. Marblehead Lime Company, with two plants in





**Figure 15** Trends in consumption of quicklime and hydrated lime in Illinois, 1955–1991.

Illinois and one each in Indiana and Michigan, was the third largest of 70 companies producing lime in the United States.

**Consumption and uses** In 1991, Illinois consumed 603,000 tons of quicklime, a 5.6% decrease from 1990, and 176,000 tons of hydrated lime, a 3.8% drop (fig. 15). The principal consumer of lime is the steel industry. Lime is used in steel refining to remove impurities. Power plants, municipal water plants, and chemical firms showed increased use of lime. Lime consumption for flue gas desulfurization is expected to increase now that Clean Air Act Amendments of 1990 have been passed.

## PRELIMINARY PRODUCTION DATA: 1992

### Minerals Extracted

Minerals mined in 1992 were valued at an estimated \$2.7 billion, a 2.0% increase from 1991, according to preliminary data (table 23). This small increase shows a slow recovery in the state's economy. Coal continued to be the leading mineral commodity in Illinois, contributing about 66% of the total value. The construction aggregates—stone and sand and gravel—ranked second with 17.5% of the total value, followed by crude oil with 14%.

### Fuels

Fossil fuel production was valued at about \$2.1 billion in 1992, 2% higher than in 1991.

**Coal** The estimated value of coal per ton in 1992 was \$29.02, up 2.4% from that of 1991. Coal production was estimated to have increased 1% to 60.6 million tons in 1992. Illinois was fifth behind Wyoming, West Virginia, Kentucky, and Pennsylvania. Consumption by electric utilities increased 2.3% during the first 9 months of 1992 (table 24). Coal shipments increased to Indiana, Wisconsin, Florida, and Tennessee. Shipment for export also increased. Decreases were recorded in shipments to Missouri, Georgia, Iowa, Alabama, Mississippi, as well as to in-state users (table 25).

**Crude oil and natural gas** Crude oil production in 1992 is estimated at 19.4 million barrels, a 1.8% increase (table 23). Production is estimated to have a value of \$19.26 per barrel, making the total worth \$373.9 million. Oil price per barrel is estimated to have decreased about 4.6% from 1991.

Natural gas production is estimated to have decreased about 26%, and its value is estimated to have decreased 27%. The estimated unit value is \$2.15 per Mcf in 1992.

### ***Industrial and Construction Materials***

The state continued to rank 16th nationally in the value of nonfuel minerals produced in 1992. Preliminary data for 1992 show a small 1% increase in total value for industrial and construction materials (data for 1992 do not include estimates for copper, lead, silver, gemstones, or tripoli). Production and value decreased about 14% for fluorspar, about 90% for dimension stone, and about 14% for fuller's earth. Crushed stone continues to be the leading nonfuel commodity in terms of value and accounts for about 59% of the state's nonfuel value. It was followed by sand and gravel, and industrial sand (table 23). Illinois continued to rank first nationally in production of fluorspar, industrial sand and gravel, and tripoli. The state ranked third in crushed stone production and ninth in sand and gravel production.

The village of North Aurora will allow the Conco-Western Stone Company to continue mining limestone from its quarry even though the quarry was recently annexed by the city. With the quarry's surface reserves nearly depleted, Conco-Western will move its operation underground to mine another 40 years of reserves and to decrease noise and dust levels.

### ***Metals and Other Minerals***

Zinc (sphalerite concentrate) and barite were the only byproducts reported to be recovered from Illinois fluorspar mines in 1992. Copper, lead, and silver production was not reported in 1992. Zinc and barite production increased 8% and 50%, respectively, although only very small amounts were produced. Among other minerals, peat production increased 33% and its value increased 10%.

### ***Minerals Processed***

Preliminary data for 1992 are not yet available for most of the minerals processed in Illinois. The American Iron and Steel Institute reported that Illinois raw steel production increased to 7,243,722 net tons, a 1.0% increase from 1991. The iron and steel industry continued to show signs of the recession, reflected in company cutbacks and closures in Illinois. At least 4,000 steel employees were out of work on Chicago's south side and in northeastern Indiana.

The gypsum industry gained in 1992, as gypsum board production is closely related to new housing starts. Although mortgage rates are at a 30-year low, housing starts have not increased as much as originally expected. A canvass of the gypsum board producers by Rock Products Don MacQueen revealed that they expect business to increase in the Midwest.

### ***Products Manufactured from Minerals***

Preliminary figures for 1992 show decreases of more than 11% in the production and value of portland cement. Illinois is not expected to show an increase for 1992, as the funds budgeted for new highway work were never released; however, it is expected that the money will be released in late 1993 and early 1994. Masonry cement production stayed about the same as in 1991; however, its value increased 35.6%. Lime production and value increased about 2% in 1992, after they had decreased in 1991.

Table 1 Illinois minerals extracted, processed, and manufactured into products, 1989–1991: production and value<sup>a</sup>

Minerals	Unit	1989			1990			1991		
		Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)
EXTRACTED										
FUELS										
Coal	thousand tons	60,131	1,693,892	28.17	61,657	1,709,750	27.73	60,035	1,702,007	28.35
Crude oil	thousand bbl	20,380	380,693	18.68	19,954	406,462	20.37	19,066	384,941	20.19
Natural gas	million cu ft	1,477	3,175	2.15	677	1,428	2.11	466	1,011	2.17
TOTAL <sup>d</sup>			2,077,760			2,117,640			2,087,959	
INDUSTRIAL AND CONSTRUCTION MATERIALS										
Clay - common	thousand tons	157	641	4.09	660	2,516	3.81	568	2,442	4.31
Sand and gravel										
Common	thousand	33,000 <sup>e</sup>	108,900 <sup>e</sup>	3.30	32,380	104,728	3.23	26,300 <sup>e</sup>	90,400 <sup>e</sup>	3.44
Industrial	thousand tons	4,582	52,935	11.55	4,486	62,531	13.94	4,146	57,210	13.80
Stone (limestone and dolomite)										
Crushed and broken	thousand tons	60,829	256,832	4.22	62,700 <sup>e</sup>	283,100 <sup>e</sup>	4.52	68,586	295,362	4.31
Dimension	thousand tons	W	W	W	W	W	W	W	W	W
TOTAL <sup>d</sup>			419,308			452,875			445,414	
Metals, gemstones, and other undisclosed <sup>c</sup>			53,822			54,352			83,811	
Total value of mineral materials extracted <sup>d</sup>			2,550,890			2,624,867			2,617,184	
PROCESSED										
Sulfur	thousand tons	252	21,852	86.84	260	20,894	80.47	240	17,485	72.94
TOTAL <sup>d</sup>			21,852			20,894			17,485	
Values that cannot be disclosed <sup>c</sup>			g			g			g	
Total value of mineral materials processed <sup>d</sup>			21,852			20,894			17,485	

Table 1 continued

Minerals	Unit	1989			1990			1991		
		Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)
MANUFACTURED INTO PRODUCTS										
Cement (shipments)										
Portland	thousand tons	2,776	117,224	42.23	2,842	116,781	41.10	2,816	116,046	41.21
Clay products, estimated			86,207			87,594			62,600	
TOTAL <sup>d</sup>			203,431			204,375			178,646	
Values that cannot be disclosed <sup>c</sup>			66,686 <sup>g</sup>			64,866 <sup>g</sup>			94,073 <sup>g</sup>	
Total value of mineral products manufactured <sup>d</sup>			270,117			269,241			272,719	
STATE TOTAL <sup>d</sup>			\$2,842,859 <sup>f</sup>			2,915,002 <sup>f</sup>			2,907,388 <sup>f</sup>	

<sup>a</sup>Sources: U.S. Bureau of Mines (USBM), Illinois Department of Mines and Minerals, Illinois State Geological Survey (ISGS).

<sup>b</sup>Units used for reporting value are 1 barrel for oil, 1000 cubic feet for gas, 1 troy ounce for silver, and 1 ton for all other minerals and materials. Metals are reported in metric tons and other materials in short tons.

<sup>c</sup>Products that cannot be disclosed or are not available:

EXTRACTED, Fuels - natural gas liquids

Industrial and construction materials - absorbent clay, fluorspar, dimension stone, tripoli

Metals - lead, zinc, silver, copper

Other - peat

PROCESSED - Natural gas liquids, expanded perlite, ground barite, calcined gypsum, exfoliated vermiculite, iron oxide pigments, primary slab zinc, secondary slab zinc, columbium and tantalum, crude iodine, slag (iron and steel), pig iron

MANUFACTURED INTO PRODUCTS - Masonry cement, lime, coke, glass

<sup>d</sup>Data may not add up to totals shown because of independent rounding.

<sup>e</sup>Estimate by USBM, no survey.

<sup>f</sup>Does not include pig iron. ISGS estimated value is approximately \$375 million.

<sup>g</sup>The values of mineral products processed that cannot be disclosed are included in manufactured products.

W = Withheld to avoid disclosing individual company data.



Table 2 Illinois mineral production compared with U.S. mineral production, 1990–1991<sup>a</sup>

Commodity	Unit	Illinois		United States		Illinois % of U.S. production	
		Quantity	Value (\$1000)	Quantity	Value (\$1,000)	Quantity	Value (\$1,000)
1990							
Coal	thousand tons	61,657	1,709,750	1,029,076	22,392,694	5.99	7.64
Crude oil	thousand bbls	19,954	406,463	2,694,517	53,971,176	0.74	0.75
Natural gas liquids	million cu ft	607	NA	13,846,932	NA	0.004	NA
Natural gas	million cu ft	677	1,428	21,522,622	36,803,684	0.003	0.004
Clays <sup>b</sup>	thousand tons	660	2,516	42,904	1,619,824	1.54	0.16
Sand and gravel <sup>c</sup>	thousand tons	36,866	167,259	939,006	3,685,600	3.93	4.54
Stone (excludes dimension stone)	thousand tons	62,700	283,100	1,222,000	5,591,300	5.13	5.06
Cement shipments (portland)	thousand tons	2,842	116,781	84,370	4,173,762	3.37	2.80
1991							
Coal	thousand tons	60,035	1,702,007	993,486	21,350,014	6.04	7.97
Crude oil	thousand bbls	19,066	384,941	2,707,039	44,666,144	0.70	0.86
Natural gas liquids	million cu ft	951	NA	16,229,684	NA	0.005	NA
Natural gas	million cu ft	466	1,011	18,522,754	35,654,002	0.003	0.005
Clays <sup>b</sup>	thousand tons	568	2,442	44,092	1,505,423	1.29	0.16
Sand and gravel <sup>c</sup>	thousand tons	30,446	147,610	805,900	3,195,977	3.78	4.62
Stone (excludes dimension stone)	thousand tons	68,586	295,362	1,102,900	5,186,800	6.22	5.69
Cement shipments (portland)	thousand tons	2,092	97,558	74,032	3,606,714	2.83	2.70

<sup>a</sup>Sources: U.S. Bureau of Mines, Illinois State Geological Survey, Illinois Department of Mines and Minerals, and American Petroleum Institute.

<sup>b</sup>Excluding fuller's earth.

<sup>c</sup>Includes industrial sand.

NA = not available.

**Table 3** Minerals extracted, processed, and manufactured by county in Illinois, 1991<sup>a</sup>

County	Approximate rank based on total value <sup>b</sup>	Minerals extracted in order of value <sup>c</sup>	Minerals processed in order of value	Mineral products in order of value
Adams	29	Stone, sand/gravel, crude oil, natural gas	Iron oxide pigments, ground barite	—
Alexander	42	Tripoli, sand/gravel	—	—
Bond	66	Crude oil, sand/gravel, clay	—	—
Boone	82	Stone, sand/gravel	—	—
Brown	86	Crude oil	—	—
Bureau	84	Sand/gravel	—	Clay products
Calhoun	95	Stone	—	—
Carroll	91	Stone	—	—
Cass	—	—	—	—
Champaign	83	Sand/gravel	—	—
Christian	12	Coal, crude oil, stone	—	—
Clark	48	Crude oil, stone, sand/gravel	—	—
Clay	33	Crude oil	Slag	—
Clinton	13	Coal, crude oil, natural gas, sand/gravel	—	—
Coles	49	Crude oil, sand/gravel, stone, natural gas	—	—
Cook	5	Stone, sand/gravel	Expanded perlite, slag, pig iron <sup>d</sup> , secondary slab <sup>d</sup> zinc <sup>d</sup> , crude iodine <sup>d</sup>	Lime, coke <sup>d</sup>
Crawford	20	Crude oil, sand/gravel	Sulfur	—
Cumberland	77	Crude oil, sand/gravel	—	—
De Kalb	55	Stone, sand/gravel	Iron oxide pigments	—
De Witt	80	Crude oil	—	—
Douglas	32	Coal, stone, crude oil	Natural gas liquids <sup>d</sup>	—
Du Page	38	Stone, sand/gravel	Exfoliated vermiculite	Glass <sup>d</sup>
Edgar	73	Crude oil, natural gas	—	—
Edwards	46	Crude oil	—	—
Effingham	53	Crude oil, natural gas,	—	—
Fayette	31	Crude oil, sand/gravel, stone, natural gas	—	—
Ford	94	Sand/gravel	—	—
Franklin	3	Coal, crude oil	—	—
Fulton	39	Coal, sand/gravel	—	—
Gallatin	10	Coal, crude oil, sand/gravel, natural gas	—	—
Greene	89	Stone	—	—
Grundy	70	Sand/gravel	—	—
Hamilton	50	Crude oil	—	—
Hancock	85	Stone, crude oil	—	—
Hardin	21	Stone, fluorspar, zinc, gemstones, sandstone, barite, silver, germanium <sup>d</sup>	Ground/crushed barite	—
Henderson	74	Stone	—	—
Henry	93	Stone, sand/gravel	—	—
Iroquois	69	Stone	—	—
Jackson	62	Stone, sand/gravel, crude oil	—	—
Jasper	40	Crude oil	—	—
Jefferson	6	Coal, crude oil	—	—
Jersey	92	Stone	—	—
Jo Daviess	88	Stone, sand/gravel	—	—
Johnson	58	Stone	—	—
Kane	23	Sand/gravel, stone, dimension stone	—	Clay products
Kankakee	45	Stone, clay, sand/gravel	Slag	—
Kendall	65	Stone, sand/gravel	—	—
Knox	30	—	—	Clay products
Lake	35	Sand/gravel, peat	Calcined gypsum, crude iodine <sup>d</sup> , columbium <sup>d</sup>	Clay products
La Salle	8	Industrial sand, stone, sand/gravel, clay	Exfoliated vermiculite, expanded perlite	Portland cement, clay products, masonry cement, glass <sup>d</sup>

Table 3 *continued*

County	Approximate rank based on total value <sup>b</sup>	Minerals extracted in order of value <sup>c</sup>	Minerals processed, in order of value	Mineral products, in order of value
Lawrence	17	Crude oil, sand/gravel	—	—
Lee	19	Stone	—	Portland/masonry cement
Livingston	47	Stone, clay, sand/gravel	—	—
Logan	18	Coal, stone, sand/gravel	—	Glass <sup>d</sup>
Macon	63	Crude oil, sand/gravel	—	Glass <sup>d</sup>
Macoupin	9	Coal, crude oil	—	—
Madison	36	Stone, crude oil sand/gravel	Sulfur, slag, pig iron <sup>d</sup>	Clay products, coke <sup>d</sup> , glass <sup>d</sup>
Marion	28	Crude oil	Iron oxide pigments, secondary slab zinc <sup>d</sup>	Glass <sup>d</sup>
Marshall	81	Sand/gravel	—	—
Mason	52	Industrial sand	—	—
Massac	26	Stone	Crude iodine	Portland/ masonry cement
McDonough	44	Coal, stone, crude oil	—	—
McHenry	27	Sand/gravel	—	—
McLean	76	Sand/gravel	—	Fiberglass <sup>d</sup>
Menard	68	Stone	—	—
Mercer	—	—	—	—
Monroe	78	Stone, crude oil	—	—
Montgomery	41	Stone, crude oil	—	Glass <sup>d</sup>
Morgan	98	Crude oil	—	—
Moultrie	97	Crude oil, sand/gravel	—	—
Ogle	37	Industrial sand, stone, sand/gravel	—	—
Peoria	57	Sand/gravel	—	—
Perry	1	Coal, crude oil	—	—
Piatt	96	Sand/gravel, crude oil	—	—
Pike	60	Sand/gravel, stone	—	—
Pope	—	—	—	—
Pulaski	16	Clay, stone, sand/gravel	—	Clay products
Putnam	90	Sand/gravel	—	—
Randolph	4	Coal, stone, crude oil, sand/gravel, natural gas	—	—
Richland	43	Crude oil	—	—
Rock Island	64	Stone, sand/gravel	—	—
St. Clair	22	Stone, sand/gravel, crude oil, natural gas	Iron oxide pigments, ground barite Primary slab zinc <sup>d</sup>	Glass <sup>d</sup>
Saline	2	Coal, crude oil, natural gas	—	—
Sangamon	56	Crude oil, stone, sand/gravel	Iron oxide pigments	—
Schuyler	34	Coal, crude oil, natural gas, stone	—	—
Scott	87	Stone	—	—
Shelby	79	Crude oil, stone	—	—
Stark	—	—	—	—
Stephenson	72	Stone, sand/gravel	—	—
Tazewell	71	Sand/gravel	—	—
Union	54	Stone	—	—
Vermilion	51	Stone, sand/gravel	—	—
Wabash	7	Coal, crude oil, sand/gravel	—	—
Warren	75	Stone	—	—
Washington	15	Coal, crude oil	—	—
Wayne	25	Crude oil	—	—
White	11	Coal, crude oil, sand/gravel	—	—
Whiteside	67	Peat, stone, sand/gravel	Slag	—
Will	24	Stone, sand/gravel	Sulfur, expanded perlite	Glass <sup>d</sup>
Williamson	14	Coal, crude oil, natural gas	—	—
Winnebago	59	Stone, sand/gravel	—	—
Woodford	61	Sand/gravel	—	—
Undistributed		Crude oil	—	—

<sup>a</sup>Sources: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, and Illinois State Geological Survey.

<sup>b</sup>Because some values are not available by county, ranking cannot be exact.

<sup>c</sup>Sand and gravel production; 1991 data were estimated to rank each county.

<sup>d</sup>Value unknown.

Table 4 Employment and wages in the Illinois mineral industry, 1990–1991<sup>a</sup>

Industry	1990				1991			
	No. of employees (1000)	Average weekly earnings (\$)	Average hours worked/week	Average hourly earnings (\$)	No. of employees (1000)	Average weekly earnings (\$)	Average hours worked/week	Average hourly earnings (\$)
Mining	19.6	713.11	41.8	17.06	19.2	700.90	41.4	16.93
Masonry, stonework	18.7	667.57	36.7	18.19	16.4	727.50	37.5	19.40
Stone, clay, glass	20.9	481.85	40.8	11.81	19.5	477.60	40.0	11.94
Primary metal industries	55.4	571.99	43.3	13.21	54.6	576.58	42.9	13.40
Blast furnaces	24.5	614.86	43.7	14.07	24.0	589.11	42.2	13.96
Iron and steel foundries	8.2	614.88	41.8	14.71	7.9	642.78	42.4	15.16
Petroleum and coal products	10.3	690.89	43.1	16.03	10.1	695.12	41.9	16.59
Gas products and distribution	8.2	686.96	46.7	14.71	8.2	683.79	45.8	14.93
Total mineral related	165.8	609.62	42.2	14.44	159.9	613.05	41.8	14.68
Total nonagricultural	5,288.3				5,220.1			
Goods producing	1,222.2				1,165.1			
Service producing	4,066.1				4,055.1			

<sup>a</sup>Source: Illinois Department of Labor, Bureau of Employment Security.Table 5 Minerals consumed in Illinois, 1990–1991<sup>a</sup>

		1990			1991		
Commodity	Unit	U.S.	Illinois	Illinois % of U.S. consumption	U.S.	Illinois	Illinois % of U.S. consumption
<b>Fuels</b>							
Coal	million tons	894.6	33.9	3.79	887.7	34.7	3.91
Coke	million tons	27.8	NA	—	24.2	NA	—
Distillate fuel oils	million bbl	1,103.0	42.5	3.85	1,066.0	36.1	3.39
Gasoline	million bbl	3,206.0	124.5	3.88	3,168.0	110.9	3.50
Kerosene	million bbl	16.0	0.2	1.09	17.0	0.2	1.19
LPG and ethane	million bbl	568.0	13.0	2.29	616.0	14.9	2.42
Natural gas	trillion cu ft	18.7	0.9	5.02	19.1	1.0	5.18
Residual fuel oil	million bbl	449.0	3.6	0.80	423.0	3.5	0.82
<b>Metals</b>							
Pig iron	million tons	56.3	2.9	5.15	45.8	2.5	5.51
Lead	thousand tons	1,275.2	72.6	5.69	1,246.3	71.5	5.74
Zinc (slab)	thousand tons	802.0	130.4	16.26	763.8	116.4	15.23
<b>Construction materials</b>							
Air-cooled slag	million tons	13.7	—	—	10.9	—	—
Asphalt and road oil	million bbl	176.0	8.3	4.74	162.0	7.9	4.89
Cement	million tons	87.7	3.7	4.22	78.1	3.3	4.23
Sand and gravel	million tons	910.6	32.4	3.56	780.3	26.3	3.37
Stone	million tons	1,222.0	62.7	5.13	1,102.9	68.6	6.22
<b>Agricultural and chemical materials</b>							
Feldspar	thousand tons	630.0	24.0	4.01	573.0	NA	—
Fluorspar	thousand tons	564.5	NA	—	483.6	NA	—
Lime <sup>b</sup>	thousand tons	17,581.0	822.0	4.70	16,920.0	779.0	4.60
Salt							
Evaporated	thousand tons	8,764.0	525.0	5.99	8,546.0	489.0	5.72
Rock	thousand tons	17,153.0	1,491.0	8.69	15,586.0	1,530.0	9.82

<sup>a</sup>Source: U.S. Bureau of Mines, U.S. Department of Energy.<sup>b</sup>Excludes regenerated lime.

NA = not available.

Table 6 Fuels and energy consumed in Illinois, 1990–1991<sup>a</sup>

Fuel	Units	1990	1991	Change	Trillion Btu <sup>b</sup>	
				1990–1991 (%)	1990 <sup>c,e</sup>	1991 <sup>d</sup>
Coal	thousand tons	33,904	34,677	+ 2.3	723.2	734.0
Natural gas	million ft <sup>3</sup>	939,502	987,589	+ 5.1	968.6	1,011.3
Gasoline	thousand bbl	124,538	110,912	-10.9	654.2	582.6
Kerosene	thousand bbl	174	203	+16.7	1.0	1.2
Distillate fuel oil	thousand bbl	42,529	36,149	-15.0	247.7	210.6
Residual fuel oil	thousand bbl	3,306	3,454	+ 4.5	20.8	21.7
Liquid petroleum gases	thousand bbl	13,008	14,913	+14.6	47.2	59.8
Nuclear power	million kWh	71,887	71,866	- 0.0	767.8	771.8
Hydropower	million kWh	78	70	-10.3	<u>0.8</u>	<u>0.7</u>
TOTAL				-1.1	3,431.3	3,393.7
Illinois percentage of total U.S. energy consumption				4.2	4.2	
Percentage of total energy consumed in Illinois						
Coal					21.08	21.63
Natural gas					28.23	29.80
Oil products					28.29	25.81
Nuclear power					22.38	22.74
Hydropower					<u>0.02</u>	<u>0.02</u>
					100.00	100.00

<sup>a</sup>Source: U.S. Department of Energy, Energy Information Administration.

<sup>b</sup>Fuel conversion factors: gasoline—5,253,000 Btu/bbl; kerosene—5,670,000 Btu/bbl; distillate fuel oil—5,825,000 Btu/bbl; residual fuel oil—6,287,000 Btu/bbl.

<sup>c</sup>1990 fuel conversion factors: coal—21,330,000 Btu/ton; natural gas—1,031 Btu/Mcf; LPG—3,625,000 Btu/bbl; nuclear power—10,680 Btu/kWh; hydropower—10,335 Btu/kWh.

<sup>d</sup>1991 fuel conversion factors: coal—21,167,000 Btu/ton; natural gas—1,024 Btu/Mcf; LPG—4,011,000 Btu/bbl; nuclear power—10,739 Btu/kWh; hydropower—10,335 Btu/kWh.

<sup>e</sup>Revised.



Table 7 Coal production in Illinois counties, 1990–1991<sup>a</sup>

County	1990 Production				1991 Production					
	No. of mines	Underground (tons)	Surface (tons)	Total (tons)	Value <sup>b</sup>	No. of mines	Underground (tons)	Surface (tons)	Total (tons)	Value <sup>b</sup>
Christian <sup>c</sup>	1	2,323,416	—	2,323,416	64,428,326	1	2,365,970	—	2,365,970	67,075,250
Clinton	1	2,964,338	—	2,964,338	82,201,093	1	2,490,794	—	2,490,794	70,614,010
Douglas	1	994,746	—	994,746	27,584,307	1	626,582	—	626,582	17,763,600
Edgar	1	—	1,380,200	1,380,200	38,272,946	—	—	—	—	—
Franklin	4	6,980,658	—	6,980,658	193,573,646	4	6,189,782	—	6,189,782	175,480,320
Fulton	1	—	471,325	471,325	13,069,842	1	—	474,291	474,291	13,446,150
Gallatin	3	1,943,747	631,780	2,575,527	71,419,364	3	2,694,121	545,600	3,239,721	91,846,090
Jefferson	2	4,271,419	—	4,271,419	118,446,449	2	4,278,727	—	4,278,727	121,301,910
Logan	1	1,314,454	—	1,314,454	36,449,809	1	1,458,245	—	1,458,245	41,341,246
Macoupin	2	3,130,907	—	3,130,907	86,820,051	3	3,491,059	—	3,491,059	98,971,523
McDonough	1	—	471,052	471,052	13,062,272	1	—	402,574	402,574	11,412,973
Perry	7	1,050,419	10,240,532	11,290,951	313,098,071	8	1,343,159	8,760,261	10,103,420	286,431,957
Randolph	4	4,970,405	1,416,800	6,387,205	177,117,195	4	4,897,741	1,446,676	6,344,417	179,864,222
Saline	6	6,087,431	1,161,874	7,249,305	201,023,228	6	6,759,114	1,151,960	7,911,074	224,278,948
Schuyler	1	—	645,152	645,152	17,890,065	1	—	637,033	637,033	18,059,886
Wabash	1	3,228,971	—	3,228,971	89,539,366	1	3,711,274	—	3,711,274	105,214,618
Washington	1	1,989,000	—	1,989,000	55,154,9701	1	1,980,100	—	1,980,100	56,135,835
White	1	1,718,467	—	1,718,467	47,653,090	1	1,736,810	—	1,736,810	49,238,564
Williamson <sup>d</sup>	3	42,759	2,227,216	2,269,975	62,946,407	4	108,975	2,484,667	2,593,642	73,529,751
TOTAL <sup>e</sup>	42	43,011,137	18,645,931	61,657,068	1,709,750,496	44	44,132,453	15,903,062	60,035,515	1,702,006,850

<sup>a</sup>Production figures from Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report.<sup>b</sup>Value calculated at an average of \$27.73/ton for 1990 and \$28.35/ton for 1991.<sup>c</sup>One mine operated at junction of Christian, Montgomery, and Sangamon Counties; all production placed in the county where tippie is located.<sup>d</sup>One mine operated at junction of Williamson and Saline Counties; all production placed in county where tippie is located.<sup>e</sup>May not add up because of independent rounding.

**Table 8** Coal production in Illinois counties, 1833–1991<sup>a</sup>

County	Cumulative total surface production (tons)	Cumulative total production (tons)	County	Cumulative total surface production (tons)	Cumulative total production (tons)
Adams	338,147	341,924	Macoupin	—	332,919,758
Bond	—	7,355,569	Madison	37,843	164,295,772
Brown	41,761	74,068	Marion	—	39,247,722
Bureau	11,094,808	53,823,055	Marshall	4,779	12,516,141
Calhoun	—	96,247	McDonough	4,644,618	7,253,099
Cass	—	212,477	McLean	—	5,544,139
Christian	—	354,352,626	Menard	—	13,462,005
Clark	4,482	4,482	Mercer	67,080	15,519,862
Clay	801	801	Monroe	—	8,284
Clinton	—	73,486,329	Montgomery	—	141,824,660
Coles	—	210,930	Morgan	13,564	190,787
Crawford	17,315	45,400	Moultrie	—	2,032,236
Douglas	—	44,397,202	Peoria	32,702,938	96,718,740
Edgar	1,587,442	2,295,898	Perry	379,274,279	480,540,332
Effingham	—	796	Pike	2,224	5,081
Franklin	—	693,796,816	Pope	34,704	36,266
Fulton	240,005,704	316,601,090	Putnam	—	10,071,893
Gallatin	10,825,245	49,909,112	Randolph	102,911,577	231,010,808
Greene	71,090	693,191	Richland	35	154
Grundy	1,635,422	40,872,430	Rock Island	—	3,846,169
Hamilton	—	6,172,927	St. Clair	116,444,567	367,370,806
Hancock	459,329	771,281	Saline	64,462,914	312,274,445
Hardin	—	40	Sangamon	—	233,449,607
Henry	9,065,783	22,910,053	Schuyler	10,419,568	12,122,984
Jackson	60,531,911	128,204,823	Scott	3,790	612,476
Jasper	—	23,739	Shelby	925	4,119,763
Jefferson	5,353,358	161,796,112	Stark	8,342,056	9,569,336
Jersey	2,290	120,350	Tazewell	—	17,633,802
Johnson	72,781	314,325	Vermilion	30,651,670	165,878,433
Kankakee	18,284,342	19,192,105	Wabash	12,082	41,480,384
Knox	62,601,174	65,896,605	Warren	132	685,466
La Salle	2,345,878	65,547,638	Washington	—	35,077,237
Livingston	139,091	10,111,437	White	—	12,187,504
Logan	—	23,940,089	Will	29,333,708	37,553,733
Macon	—	11,000,468	Williamson	104,816,898	461,911,027
			Woodford	—	7,810,160
Total cumulative surface production, 1911–1991			Estimated production, all counties, 1833–1881		
			73,386,123		
Total cumulative production, 1882–1991			Total cumulative production, 1833–1991		
5,431,353,506			5,504,739,629		

<sup>a</sup>Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Reports. This table was revised to place production in county where tipple is located.



Table 9 Employment and production by method of coal mining in Illinois, 1980–1991<sup>a</sup>

Year	Underground				Surface			
	No. of mines	No. of employees	Average production/ mine (tons)	Average no. employees/ mine	No. of mines	No. of employees	Average production/ mine (tons)	Average no. employees/ mine
1980	31	13,219	1,128,022	426	35	5,065	787,821	145
1981	31	13,351	943,081	431	27	4,797	835,672	178
1982	32	10,554	1,115,121	330	28	4,397	919,439	157
1983	31	10,514	1,076,464	339	23	4,245	1,087,096	185
1984	31	10,857	1,288,564	350	21	3,946	1,206,843	188
1985	32	11,386	1,207,769	356	20	3,445	1,091,432	172
1986	31	10,379	1,320,375	335	20	3,170	1,115,084	159
1987	28	9,263	1,399,588	331	19	2,925	1,135,416	154
1988	27	8,830	1,477,178	327	16	2,684	1,248,037	168
1989	27	8,729	1,501,026	323	15	2,376	1,306,890	158
1990	26	7,740	1,654,275	298	16	2,389	1,165,371	149
1991	29	7,844	1,521,809	270	15	1,823	1,060,204	122

<sup>a</sup>Source: Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report.

Table 10 Coal production of Illinois companies, 1990–1991<sup>a</sup>

1990												1991			
Rank	Company	No. of mines		Production (tons)	Percentage of total production	No. of employees	Rank	No. of mines		Production (tons)	Percentage of total production	No. of employees			
		Under- ground	Surface					Under- ground	Surface						
1	Zeigler Coal <sup>b</sup>	7	0	10,921,707	17.71	1,479	1	7	0	9,854,254	16.41	1,556			
2	Peabody Coal	4	2	10,728,546	17.40	2,037	2	4	1	9,451,783	15.74	1,739			
3	Arch of Illinois	0	3	6,414,416	10.40	685	5	0	2	5,045,831	8.41	551			
4	Consolidation Coal	1	2	6,122,053	9.93	887	3	1	2	6,298,414	10.49	862			
5	AMAX Coal	1	1	5,443,148	8.83	932	4	1	1	6,121,985	10.20	894			
6	Monterey Coal	2	0	4,946,171	8.02	999	6	2	0	4,434,072	7.39	851			
7	Freeman United Coal Mining	2	2	3,595,608	5.83	838	7	3	2	3,619,197	6.03	722			
8	Kerr-McGee Coal	1	0	3,021,851	4.90	555	8	1	0	3,525,200	5.87	573			
9	White County Coal	1	0	1,718,467	2.79	258	9	1	0	1,736,810	2.89	258			
10	Kenellis Energies <sup>c</sup>	1	0	1,697,849	2.75	253	13	1	0	1,237,845	2.06	253			
11	Turris Coal	1	0	1,314,454	2.13	258	11	1	0	1,458,245	2.43	259			
12	Sahara Coal	1	1	1,132,420	1.84	362	10	1	1	1,500,615	2.50	367			
13	Cutler Mining	1	0	1,050,419	1.70	136	12	2	0	1,343,159	2.24	223			
14	Arclar Company	1	0	777,741	1.26	97	14	1	0	1,103,447	1.84	127			
15	Triad Mining	0	1	645,152	1.05	55	16	0	1	637,033	1.06	52			
16	Jader Coal	0	1	631,780	1.03	85	17	0	1	545,600	0.91	58			
17	Equality Mining	0	1	619,444	1.01	44	18	0	1	543,967	0.91	47			
18	Mid State Coal	0	1	471,325	0.76	85	19	0	1	474,291	0.79	86			
19	Sugar Camp Coal	1	0	348,719	0.57	64	15	1	0	894,935	1.49	113			
20	Lorenzo Mining	1	0	42,759	0.07	8	—	—	—	—	—	—			
21	Phoenix Mining	0	1	13,039	0.02	12	21	0	1	73,956	0.12	16			
	Southern IL Mining	—	—	—	—	—	22	1	0	91,713	0.15	51			
	Pipestone <sup>d</sup>	—	—	—	—	—	23	0	1	25,901	0.04	0			
	Coal Valley Mining	—	—	—	—	—	20	1	0	17,262	0.03	9			
TOTAL		26	16	61,657,068	100.00	10,129		29	15	60,035,515	100.00	9,667			

<sup>a</sup>Source: Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report.<sup>b</sup>Zeigler Coal purchased Old Ben Coal in 1990.<sup>c</sup>Now Brushy Creek Coal.<sup>d</sup>Was Arch of Illinois in 1990.

Table 11 Coal shipped from Illinois to other states, 1987–1991<sup>a</sup>

Consumers	Minnesota					Missouri	Indiana	Kentucky (1,000 tons)	Georgia and Florida	Other states <sup>b</sup>	Exports and miscellaneous	Illinois	Total
	Wisconsin	and Michigan	Iowa										
Electric utilities													
1987	1,757	296	1,621			12,945	9,282	61	9,140	2,364	—	15,909	53,375
1988	2,058	79	2,217			12,871	7,871	136	9,791	2,951	—	14,372	52,344
1989	1,359	57	2,072			13,109	8,247	424	9,055	4,163	—	14,911	53,397
1990	1,062	45	1,340			12,132	9,483	453	9,019	5,210	—	16,021	54,765
1991	667	42	1,407			11,869	8,301	15	8,811	5,135	—	16,239	52,489
Coke and gas plants													
1987	—	—	—			—	1,531	—	—	—	—	294	1,826
1988	—	—	—			—	1,414	—	—	e	—	94	1,508
1989	—	—	—			—	1,116	—	—	—	—	425	1,541
1990	—	—	—			—	937	—	—	—	—	193	1,131
1991	—	—	—			—	696	—	—	—	—	—	696
Retail dealers													
1987	—	—	11			44	4	—	—	17	—	200	291
1988	—	—	e			45	e	—	—	33	—	197	285
1989	—	—	e			228	e	—	—	16	—	217	471
1990	—	—	31			155	e	—	—	1	4	199	387
1991	—	—	15			114	e	—	—	e	4	220	350
Others													
1987	287	31	389			754	269	—	—	91	—	2,211	4,063
1988	260	7	313			740	223	—	—	120	7	2,587	4,270
1989	290	—	290			619	145	1	—	140	16	2,005	3,510
1990	300	5	221			779	151	—	—	126	—	2,286	3,868
1991	304	3	51			654	189	—	—	223	—	2,327	3,751
Totals <sup>c</sup>													
1987	2,044	326	2,020			13,743	11,087	61	9,140	2,472	345 <sup>d</sup>	18,614	59,899 <sup>d</sup>
1988	2,317	85	2,530			13,656	9,508	136	9,791	3,104	494 <sup>d</sup>	17,250	58,901 <sup>d</sup>
1989	1,649	57	2,362			13,956	9,508	424	9,055	4,319	488 <sup>d</sup>	17,558	59,464 <sup>d</sup>
1990	1,362	51	1,592			13,067	10,571	453	9,019	5,336	442 <sup>d</sup>	18,700	60,592 <sup>d</sup>
1991	971	45	1,473			12,637	9,185	15	8,811	5,358	1,271 <sup>d</sup>	18,787	58,553 <sup>d</sup>

<sup>a</sup>Sources: U.S. Department of Energy, Coal Distribution, 1987–1991.

<sup>b</sup>Includes Alabama (1987–1991), Mississippi (1987–1991), Tennessee (1987–1991), Louisiana (1987, 1989), Ohio (1987–1989, 1991<sup>e</sup>, 1990), Pennsylvania (1989–1991<sup>e</sup>, 1987–1989), Kansas (1987–1988, 1990–1991), Texas (1987, 1988, 1991), California (1987–1988), Arkansas (1987, 1988, 1990, 1991), Massachusetts (1987<sup>e</sup>–1990<sup>e</sup>), North Dakota (1987<sup>e</sup>), Montana (1987, 1990–1991<sup>e</sup>), New York (1990–1991<sup>e</sup>), Wyoming (1990), Connecticut (1991), North Carolina (1991<sup>e</sup>), Virginia (1991<sup>e</sup>).

<sup>c</sup>Totals may not add up because of independent rounding.

<sup>d</sup>Includes shipments with no breakdown by consuming sector: 343,000 tons foreign, 2,000 U.S. in 1987; 487,000 tons foreign in 1988; 472,000 tons foreign in 1989; 370,000 tons foreign and 72,000 U.S. in 1990; 1,259,000 tons foreign and 8,000 tons U.S. in 1991.

<sup>e</sup>Quantity is less than 500 tons.

Table 12 Sources of coal consumed in Illinois, 1987–1991<sup>a</sup>

Consumers	Western Kentucky		Indiana	Ohio, eastern Pennsylvania, <sup>b</sup> and northern West Virginia	Southern West Virginia, <sup>c</sup> Virginia, and eastern Kentucky	Western interior <sup>d</sup> states	Western states <sup>e</sup>	Montana <sup>f</sup> and Washington	Pennsylvania	Total coal consumed in Illinois
	Illinois				(1,000 tons)					
Electric utilities										
1987	15,909	1,154	1,427	—	1,849	—	5,608	3,500	4	29,452
1988	14,372	1,102	1,150	—	1,630	—	4,777	3,876	9	26,908
1989	14,911	111	2,012	7	1,716	—	3,555	2,880	—	25,192
1990	16,021	891	1,892	—	1,823	—	3,662	2,651	—	26,939
1991	16,239	166	1,186	—	2,008	—	4,068	3,203	—	26,871
Coke and gas plants										
1987	294	—	—	—	1,344	—	—	—	—	1,638
1988	94	—	—	—	1,312	—	—	—	—	1,406
1989	425	—	—	—	1,288	—	—	—	—	1,714
1990	193	—	21	15	1,543	—	—	—	—	1,773
1991	—	—	—	109	1,454	—	—	—	—	1,562
Retail dealers										
1987	200	1	49	—	22	—	9	—	1	273
1988	197	7	44	—	7	—	—	—	1	256
1989	217	21	29	—	30	—	—	—	—	298
1990	199	29	34	—	1	—	—	—	—	265
1991	220	—	32	3	1	—	—	—	3	257
Others										
1987	2,211	528	356	68	820	1	—	—	25	3,999
1988	2,587	387	647	21	659	9	—	—	10	4,311
1989	2,005	238	234	27	395	6	—	9	8	2,913
1990	2,286	305	426	49	319	1	93	—	4	3,483
1991	2,327	304	480	53	379	—	796	—	8	4,340
Total										
1987	18,614	1,683	1,832	68	4,025	1	5,608	3,500	30	35,362
1988	17,250	1,496	1,841	21	3,609	9	4,777	3,876	11	32,882
1989	17,558	370	2,275	34	3,429	6	3,555	2,880	10	30,116
1990	18,700	1,224	2,373	64	3,687	1	3,756	2,651	5	32,461
1991	18,787	470	1,698	165	3,843	—	4,864	3,203	11	33,031

<sup>a</sup>Sources: U.S. Department of Energy, Coal Distribution.

<sup>b</sup>Includes Districts 1, 2, 3, 4, and 6 (Maryland, Ohio, eastern Pennsylvania, northern West Virginia).

<sup>c</sup>Includes Districts 7, 8, and 13 (Alabama, Georgia, eastern Kentucky, North Carolina, Tennessee, Virginia, southern West Virginia).

<sup>d</sup>Includes Districts 14 and 15 (Arkansas, Kansas, Missouri, Oklahoma, Texas).

<sup>e</sup>Includes Districts 16, 17, and 19–21 (Colorado, Idaho, North Dakota, New Mexico, South Dakota, Utah, Wyoming).

<sup>f</sup>Includes Districts 22 and 23 (Alaska, Montana, Oregon, Washington).

<sup>g</sup>Quantity is less than 500 tons.



**Table 13** Crude oil production in Illinois counties between 1888 and 1991; value for 1990 and 1991<sup>a</sup>

County	1888–1991 cumulative production (1000 bbl)	1990			1991			1990–1991 percent change
		Production (1000 bbl)	% of total Illinois production	Value <sup>d</sup> (\$1000)	Production (1000 bbl)	% of total Illinois production	Value <sup>d</sup> (\$1000)	
Adams	289	3	0.0	65	5	0.0	101	+57.1
Bond	8,250	66	0.3	1,337	63	0.3	1,273	- 4.0
Brown	2,156	41	0.2	836	37	0.2	755	- 8.9
Champaign	7	—	—	—	—	—	—	—
Christian	30,490	279	1.4	5,687	256	1.3	5,159	- 8.5
Clark-Cumberland	94,978	247	1.2	5,026	265	1.4	5,351	+ 7.4
Clay	150,557	996	5.0	20,290	917	4.8	18,510	- 8.0
Clinton	88,675	230	1.2	4,692	215	1.1	4,343	- 6.6
Coles	25,429	142	0.7	2,902	159	0.8	3,203	+11.4
Crawford	255,685	2,072	10.4	42,214	2,089	11.0	42,185	+ 0.8
De Witt	3,897	54	0.3	1,106	54	0.3	1,084	- 1.1
Douglas	3,678	4	0.0	78	5	0.0	104	+35.6
Edgar	4,755	67	0.3	1,361	81	0.4	1,629	+20.8
Edwards	57,821	536	2.7	10,927	488	2.6	9,852	- 9.0
Effingham	20,324	243	1.2	4,955	253	1.3	5,104	+ 3.9
Fayette	412,993	972	4.9	19,796	975	5.1	19,691	+ 0.4
Franklin	82,556	742	3.7	15,123	675	3.5	13,629	- 9.1
Gallatin	56,378	330	1.7	6,725	293	1.5	5,917	-11.2
Hamilton	138,660	367	1.8	7,477	309	1.6	6,232	-15.9
Jackson	113	5	0.0	104	4	0.0	85	-17.0
Jasper	62,004	712	3.6	14,495	661	3.5	13,342	- 7.1
Jefferson	96,046	737	3.7	15,007	710	3.7	14,342	- 3.6
Lawrence	428,152	2,565	12.9	52,244	2,559	13.4	51,657	- 0.2
Macon	2,691	61	0.3	1,239	66	0.4	1,343	+ 9.3
Macoupin	406	8	0.0	164	10	0.1	196	+20.5
Madison	18,842	77	0.4	1,566	75	0.4	1,521	- 2.0
Marion	436,557	1,188	6.0	24,196	1,209	6.3	24,410	+ 1.8
McDonough- Hancock <sup>c</sup>	5,701	5	0.0	97	2	0.0	49	-49.2
Monroe	146	19	0.1	388	20	0.1	399	+ 3.8
Montgomery	163	2	0.0	40	2	0.0	43	+ 9.1
Morgan	5	2	0.0	35	1	0.0	20	-43.2
Moultrie	138	2	0.0	43	2	0.0	42	- 1.3
Perry	965	9	0.0	174	8	0.1	162	- 6.0
Piatt	8	f	0.0	3	f	0.0	3	+ 9.2
Randolph	5,014	9	0.0	174	11	0.1	218	+26.9
Richland	113,220	691	3.5	14,080	611	3.2	12,329	-11.7
St. Clair	3,678	18	1.6	6,645	20	0.1	409	+10.4
Saline	25,203	326	0.3	1,160	226	1.2	4,571	-30.6
Sangamon	5,264	57	0.1	337	79	0.4	1,586	+37.9
Schuyler	237	17	0.3	1,017	13	0.1	257	-23.0
Shelby	2,318	50	0.1	374	52	0.3	1,058	+ 5.0
Wabash	122,826	1,081	5.4	22,019	931	4.9	18,806	-13.8
Washington	36,596	363	1.8	7,391	360	1.9	7,266	- 0.8
Wayne	279,261	1,656	8.3	33,729	1,572	8.3	31,744	- 5.0
White	319,803	1,896	9.5	38,629	1,728	9.1	34,888	- 8.9
Williamson	2,831	40	0.2	806	39	0.2	785	- 1.8
Other <sup>b</sup>	<u>18,531</u>	<u>967</u>	<u>4.9</u>	<u>19,711</u>	<u>955</u>	<u>5.0</u>	<u>19,288</u>	<u>- 1.3</u>
Total <sup>e</sup>	3,424,298	19,954	100.0	406,462	19,066	100.0	384,941	- 4.5

<sup>a</sup>Source: Illinois State Geological Survey.

<sup>b</sup>Could not be assigned to individual field or county.

<sup>c</sup>No oil production reported for Hancock County in 1971–1978; 476 bbl was produced in 1990 and 156 bbl in 1991.

<sup>d</sup>Value calculated at an estimated average price of \$20.37/barrel for 1990 and \$20.19/barrel for 1991.

<sup>e</sup>May not add up because of independent rounding.

<sup>f</sup>Less than 1,000 bbl.

**Table 14** Crude oil production from major fields (>200,000 barrels per year) in Illinois, 1990–1991<sup>a</sup>

Field	County	1990		1991		1990–1991 Change (%)
		Production (1000 bbl)	% of Illinois total	Production (1000 bbl)	% of Illinois total	
Lawrence	Lawrence Crawford	2,510.6	12.6	2,504.5	13.1	-0.2
Clay City Consolidated	Clay Wayne Richland Jasper	2,335.7	11.7	2,114.0	11.1	+9.5
Main Consolidated	Crawford Lawrence Jasper	2,030.6	10.2	1,998.4	10.5	-1.6
New Harmony Consolidated	White Wabash Edwards	980.3	4.9	811.5	4.3	-17.2
Louden	Fayette Effingham	888.1	4.5	858.6	4.5	-3.3
Salem	Marion Jefferson	851.1	4.3	930.8	4.9	+9.4
Sailor Springs Consolidated	Clay Jasper Effingham	457.3	2.3	405.8	2.1	-11.3
Phillipstown Consolidated	White Edwards	381.9	1.9	365.5	1.9	-4.3
Roland Consolidated	White Gallatin	299.7	1.5	280.4	1.5	-6.4
Albion Consolidated	Edwards White	282.0	1.4	238.6	1.3	-15.4
Allendale	Wabash Lawrence	263.8	1.3	222.9	1.2	-15.5
Goldengate Consolidated	Wayne White Edwards	205.5	1.0	b		
Herald Consolidated	White Gallatin	b		214.4	1.1	-
		11,486.6	57.6	10,945.4	57.4	-4.7

<sup>a</sup>Source: Illinois State Geological Survey.<sup>b</sup>Less than 200,000 barrels of oil per year.

**Table 15** Petroleum products consumed in Illinois, 1987–1991<sup>a</sup>

	1987 <sup>d</sup>	1988 <sup>d</sup>	1989 <sup>d</sup> (1,000 bbl)	1990 <sup>d</sup>	1991
Motor gasoline <sup>b</sup>	112,409	120,344	120,176	124,538	110,912
Kerosene	303	350	367	174	203
Distillate fuel oil	34,129	33,662	34,565	42,529	36,149
Residual fuel oil	6,964	5,908	4,048	3,622	3,454
Lubricants	3,493	3,369	3,455	3,556	3,181
Liquefied gases	41,884	45,341	13,097	13,008	14,913
Asphalt and road oil	6,315	5,604	8,052	8,339	7,917
Other <sup>c</sup>	<u>25,513</u>	<u>28,278</u>	<u>28,145</u>	<u>30,692</u>	<u>28,797</u>
Total	231,011	242,855	211,906	226,456	205,527

<sup>a</sup>Source: State Energy Data Report, U.S. DOE/EIA-0214.<sup>b</sup>Aviation and motor gasoline and jet fuel.<sup>c</sup>Includes natural gasoline, unfractionated stream, plant condensate, petrochemical feedstocks, special naphthas, non-electric utility sector use of petroleum coke, still gas, wax, unfinished oils, motor gasoline and aviation gasoline blending components, and miscellaneous products.<sup>d</sup>Revised.**Table 16** Natural gas production in Illinois, 1984–1991<sup>a</sup>

Year	Withdrawals (million cu ft)		
	Gas wells	Oil wells	Total
1984	1,399.6	130.4	1,530
1985	1,228.0	96.0	1,324
1986	1,545.9	341.6	1,888
1987	1,215.2	155.8	1,371
1988	1,289.5	181.2	1,471
1989	1,268.0	209.0	1,477
1990	653.0	24.0	677
1991	453.0	13.0	466

<sup>a</sup>Source: Illinois State Geological Survey.

**Table 17** Natural gas production from large fields in Illinois counties, 1989–1991<sup>a</sup>

Gas field	County	Production (million cu ft)			Change (%)	
		1989	1990	1991	1989–1990	1990–1991
Liberty	Adams	188.6	181.7	41.3	- 3.7	- 77.3
Stolletown	Clinton	43.1	33.3	18.8	- 22.7	-43.5
Mattoon	Coles	148.7	60.6	32.9	- 59.2	-45.7
Ashmore East	Edgar	47.8	28.2	21.5	- 41.0	-23.8
Omaha	Gallatin	—	58.3	81.0	—	+ 38.9
Prentice	Morgan	549.1	d	d	—	—
Fishhook	Pike	151.2	d	d	—	—
St. Libory	St. Clair	56.5	104.6	95.1	+ 85.1	- 9.1
Eldorado West	Saline	33.6	38.4	38.5	+ 14.3	+ 0.3
Raleigh South	Saline	33.7	b	b	- 63.8	- 2.5
Keenville	Wayne	199.3	—	e	—	—
Pittsburg	Williamson	b	133.9	101.5	—	- 24.2
Other <sup>b</sup>		25.3	37.9	35.5	+ 49.8	- 6.3
<b>TOTAL<sup>c</sup></b>		<b>1,476.9</b>	<b>676.9</b>	<b>466.1</b>	<b>- 54.2</b>	<b>- 31.1</b>

<sup>a</sup>Source: Illinois State Geological Survey. Fields producing 20 million cu ft or more.

<sup>b</sup>Louden, Fayette and Effingham Counties; Eden, Randolph County; Eldorado Consolidated, Saline County (1989, 1990, 1991); Raleigh South, Saline County (1990, 1991); Gallatin County; Harco East, Saline County (1991); Eldorado East, Pittsburg, Williamson County (1989).

<sup>c</sup>Totals may not add up because of rounding.

<sup>d</sup>Depleted.

<sup>e</sup>Idled.

**Table 18** Natural gas consumed in Illinois, 1990–1991<sup>a</sup>

Consumers	1990		1991		1990–1991 change (%)
	Quantity (million cu ft)	% of total consumption	Quantity (million cu ft)	% of total consumption	
Residential	442,163	47.1	466,970	47.3	+ 5.6
Commercial	200,267	21.3	193,842	19.6	- 3.2
Industrial	275,630	29.3	302,691	30.6	+ 9.8
Electric utilities	9,195	1.0	12,865	1.4	+39.9
Vehicle fuel	5	0	7	—	+40.0
Total delivered to consumers	927,260	98.7	976,374	98.9	+ 5.3
Other uses <sup>b</sup>	12,242	1.3	11,215	1.1	- 8.4
Total consumption	939,502	100.0	987,589	100.0	+ 5.1

<sup>a</sup>Source: U.S. Department of Energy.

<sup>b</sup>Includes lease and plant fuel, pipeline fuel, and extraction loss.

<sup>c</sup>Not available.



**Table 19** Production and value of Illinois stone by district,<sup>a</sup> 1991<sup>b</sup>

County	Companies <sup>c</sup>	Operations	Total quantity (1000 ton)	Value (\$1000)
<b>District 1</b>				
Boone	Henry	Rock Island		
Carroll	Jo Daviess	Stephenson		
Cook	Kane	Whiteside	55	87
De Kalb	Lee	Will		
Du Page	Ogle	Winnebago		
<b>District 2</b>				
Adams	McDonough	Sangamon		
Christian	Menard	Schuyler		
Hancock	Montgomery	Scott	24	34
Henderson	Peoria	Warren		
Logan	Pike			
<b>District 3</b>				
Clark	Kankakee	Livingston		
Coles	Kendall	Shelby	20	26
Douglas	La Salle	Vermilion		
Iroquois				
<b>District 4</b>				
Calhoun	Jersey	Pulaski		
Fayette	Johnson	Randolph		
Greene	Madison	St. Clair	27	30
Hardin	Massac	Union		
Jackson	Monroe			
	Total		96 <sup>c</sup>	177
			68,586	295,362

<sup>a</sup>See figure 9.<sup>b</sup>Source: U.S. Bureau of Mines.<sup>c</sup>This column does not total because some companies have operations in more than one county.**Table 20** Illinois stone production by size of operation, 1989 and 1991<sup>a</sup>

Size of operation (tons/years)	1989			1991		
	No. of quarries	Production <sup>a</sup> (tons)	% of total	No. of quarries	Production <sup>b</sup> (tons)	% of total
less than 25,000	41	393,417	0.7	38	404,053	0.6
25,000 to 49,999	24	869,136	1.4	25	955,838	1.4
50,000 to 74,999	13	742,740	1.2	13	779,765	1.1
75,000 to 99,999	10	862,321	1.4	10	843,956	1.2
100,000 to 199,999	29	4,131,452	6.8	25	3,672,983	5.3
200,000 to 299,999	20	4,948,627	8.1	16	3,881,600	5.7
300,000 to 399,999	7	2,325,606	3.8	6	2,050,600	3.0
400,000 to 599,999	9	4,397,196	7.2	15	7,034,879	10.3
600,000 to 699,999	5	3,269,602	5.4	4	2,418,807	3.5
700,000 to 799,999	5	3,818,583	6.3	5	3,611,151	5.3
800,000 to 899,999	0	—	—	4	3,311,541	4.8
900,000 and over	15	35,069,945	57.7	16	39,621,033	57.8
Total	199	52,102,422	100.0	177	68,586,206	100.0

<sup>a</sup>Source: U.S. Bureau of Mines. Due to the canvassing procedure used for stone production, 1988 information will not be available.<sup>b</sup>Excludes dimension stone.



**Table 22** Portland cement manufactured in Illinois, 1990–1991<sup>a</sup>

	1990	1991	Change (%) 1990–1991
Active plants	4	4	—
Production (tons)	2,662,350	2,665,000	+ 0.10
Shipments from mills			
Quantity (tons)	2,841,724	2,815,967	- 0.90
Value (\$)	116,781,410	116,046,000	- 0.63
Average value/ton	41.10	41.21	+ 0.27
Stocks at mills, Dec. 31			
(tons)	301,002	310,000	+ 2.99

<sup>a</sup>Source: U.S. Bureau of Mines.**Table 23** Illinois mineral production data for 1991 compared with preliminary data for 1992<sup>a</sup>

		1991		1992		Change (%) 1991–1992	
Minerals extracted	Unit	Quantity	Value (\$ 1000)	Quantity	Value (\$ 1000)	Quantity	Value
Fuels							
Coal	thousand	60,036	1,702,007	60,639	1,759,744 <sup>b</sup>	+ 1.0	+ 3.4
Crude oil	thousand bbl	19,066	384,941	19,414	373,914	+ 1.8	- 2.9
Natural gas	thousand Mcf	466	1,011	346	743 <sup>b</sup>	- 25.8	- 26.5
Industrial and construction materials							
Stone <sup>c</sup>	thousand tons	68,586	295,362	70,800	314,000	+ 3.2	+ 6.3
Sand and gravel	thousand tons	30,446	147,610	31,221	153,053	+ 2.5	+ 3.7
Clay <sup>d</sup>	thousand tons	568	2,442	491	2,210	- 13.6	- 9.5
Metals, gemstones and other undisclosed <sup>e</sup>			83,811		65,530		- 38.7
Total value of minerals extracted			\$2,617,184		2,669,194		+ 2.0

<sup>a</sup>Source: U.S. Bureau of Mines and Illinois Department of Mines and Minerals.<sup>b</sup>Estimated by Illinois State Geological Survey.<sup>c</sup>Dimension stone included with values that cannot be disclosed.<sup>d</sup>Excludes fuller's earth; included with values that cannot be disclosed.<sup>e</sup>Includes fluorspar, zinc, barite, peat, gemstones, fuller's earth, sandstone, and dimension stone for 1991 and 1992, and copper, lead, silver, tripoli for 1991 with no estimate for 1992.

**Table 24** Illinois coal shipped to consumers in the United States, 1990–1992<sup>a</sup>

Consumers	1990	1991	1992	1990–1991 change (%)	1991–1992 change (%)
	Jan.–Sept. _____	Jan.–Sept. (1000 tons)	Jan.–Sept. _____		
Electric utilities	41,299	39,169	40,078	- 5.2	+ 2.3
Coke and gas plant	966	498	421	- 48.4	- 15.5
Retail dealers	307	257	209	- 16.3	- 18.7
Others	2,731	2,764	3,005	+ 1.2	+ 8.7
Used at mine	62	5	1	- 91.9	- 80.0
Foreign	<u>342</u>	<u>846</u>	<u>954</u>	<u>+147.4</u>	<u>+ 12.8</u>
Total	45,707	43,539	44,668	- 4.7	+ 2.6

<sup>a</sup>Source: U.S. Department of Energy, Coal Distribution, January–September, 1990, 1991, and 1992.

**Table 25** Coal shipments from Illinois to other states, 1990–1992<sup>a</sup>

Consumers	1990	1991	1992	1990–1991 change (%)	1991–1992 change (%)
	Jan.–Sept. _____	Jan.–Sept. (1000 tons)	Jan.–Sept. _____		
Illinois	13,994	11,858	11,760	- 15.3	- 0.8
Missouri	9,717	9,479	8,445	- 2.4	- 10.9
Indiana	7,690	6,327	7,491	- 17.7	+ 18.4
Wisconsin	1,094	480	807	- 56.1	+ 68.1
Georgia	3,576	3,764	3,740	+ 5.3	- 0.6
Iowa	1,313	1,177	1,138	- 10.4	- 3.3
Alabama	897	796	549	- 11.3	- 31.0
Florida	3,147	3,391	4,068	+ 7.8	+ 20.0
Tennessee	1,637	1,610	2,003	- 1.6	+ 24.4
Mississippi	893	1,058	978	+ 18.5	- 7.6
Other states <sup>b</sup>	1,407	2,753	2,735	+ 95.7	- 0.7
Exports	<u>342</u>	<u>846</u>	<u>954</u>	<u>-147.4</u>	<u>+ 12.8</u>
Total	45,707	43,539	44,668	- 4.7	+ 2.6

<sup>a</sup>Source: U.S. Department of Energy, Coal Distribution, January–September, 1990, 1991, and 1992.

<sup>b</sup>Kansas, Minnesota, (1990–1992), Arkansas, Michigan, Montana, Ohio, Pennsylvania (1990, 1991), Kentucky, Massachusetts, Wyoming (1990), North Dakota, Texas, Virginia (1991).





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